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POND AT TORRESDALE HATCHERY, PHILADELPHIA.

Commonwealth of Pennsylvania

REPORT

OF THE

DEPARTMENT OF FISHERIES

FROM

DECEMBER 1, 1907, TO NOVEMBER 30, 1908

HARRISBURG:
C. E. AUGHINBAUGH, PRINTER TO THE STATE OF PENNSYLVANIA
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INTENTIONAL SECOND EXPOSURE

DEPARTMENT OF FISHERIES OF THE COMMONWEALTH OF PENNSYLVANIA.

Commissioner of Fisheries.

WILLIAM E. MEEHAN, Office, Harrisburg.

Board of Fishery Commissioners.

WILLIAM E. MEEHAN, President.
JOHN HAMBERGER, Erie.
HENRY C. COX, Wellsboro.
ANDREW R. WHITAKER, Phoenixville.
W. A. LEISENRING, Mauch Chunk.

Superintendent of Hatcheries.

Corry Hatchery No. 1, William Buller, Corry, Pa.

Erie Hatchery No. 2, Philip H. Hartman, Erie.

Bellefonte Hatchery No. 3, Howard M. Buller, Bellefonte, R. F. D. No. 2. Assistant Superintendent, B. O. Webster, Bellefonte, R. F. D. No. 2.

Wayne County Hatchery No. 4, Nathan R. Buller, Pleasant Mount.

Torresdale Hatchery No. 5, Jerry R. Berkhous, Holmesburg, Philadelphia.

Erie Auxiliary No. 6, (Union City Hatchery), Abraham G. Buller, Union City.

Spruce Creek Hatchery No. 7, William F. Haas, Spruce Creek, Pa.

Crawford Hatchery No. 8, W. H. Safford, Conneaut Lake.

LETTER OF TRANSMITTAL.

Hon. Edwin S. Stuart, Governor of Pennsylvania, Harrisburg, Pa.:

Sir: I have the honor to herewith present the report of the Department of Fisheries for the year beginning December 1, 1907, and endign November 30, 1908, the fifth report since my incumbency as Commissioner of Fisheries.

Respectfully,

W. E. MEEHAN,
Commissioner of Fisheries.

REPORT

OF THE

BOARD OF FISHERY COMMISSION.

Honorable Edwin S. Stuart, Governor of the Commonwealth of Pennsylvania, Harrisburg, Pa.:

Sir: We have the honor to herewith present a report of the operations of the Department of Fisheries from December 1, 1907, to November 30, 1908. The work of fish propagation has been very satisfactory. While the total output is not quite as great as the previous year, a comparison of the tables submitted by the Commissioner shows a healthy increase among most of the species; that the decrease in the total was due to a fall off in two species, the eggs of which are gathered from wild fish and in huge quantities and the collection of which depends almost altogether on weather conditions.

The total output of fish for 1908 was 661,952,851 as against 663,295,515 in 1907. The increase in the output of black bass was nearly three times that of last year owing to larger ponds in the hatcheries and extended field work. An output of over 70,000,000 of blue pike was made possible entirely through the specific appropriation which which was made by the Legislature two years ago for field work, and owing to the unfavorable weather conditions, had it not been for the appropriation, the output of pickerel and yellow perch eggs would have been much less than it was.

A noticeable and gratifying feature of the output is in the increased propagation of what are known as the commoner fishes, but which at the same time are highly esteemed for food, as for example the catfishes and sunfishes. The output of catfish was nearly twenty times greater than in 1907 and of sunfish nearly four times.

The value of artificial fish culture, especially that part of it which is designated as field work, has been demonstrated to an astonishing degree in Lake Erie. Five or six years ago it scarcely paid the fishermen of the port of Lake Erie to fish specially for white fish. At present there are at least six large steam tugs fitted out with white fish nets and every boat fishing is sure to bring in a greater or less quantity of this very valuable food fish daily. As many as two tons of white fish have been caught in a single boat for which the fishermen receive eight cents per pound.

While lake herring have never been as scarce as white fish there was an appreciable decrease in the annual catch until last year when young fish began to appear in large numbers. This year the

run of herring was so vast that at times the dealers could not handle the daily catch. On one occasion there was an excess of twenty tons per day for over a week and which excess was given away by the fishermen.

The run of herring continued abundant throughout the autumn and in the latter part of November the catches became so huge that the space allotted by the dealers in their ice houses became crowded and again the quantity caught could not be handled and the fishermen were compelled to set their nets on the blue pike grounds. As many as 25,000 pounds of herring were taken by a boat in a single haul, and many boats brought in from eight to twelve tons of fish of different species daily.

Blue pike have also been very abundant. The vast increase in the catch of white fish, herring and blue pike in Pennsylvania waters is ascribed by the fishermen with every evidence of correctness to the artificial work performed by the Department. One point which indicates strongly that it was due to artificial propagation is that the increase has been felt strongly at the fishing grounds of Port Stanley, Port Burrell and Port Maitland on the Canadian shore opposite the Pennsylvania line. Fishermen at Port Maitland informed officers of the Department that six years ago the maximum amount of white fish taken from their nets daily were from eight to twelve tons, while this year they are taking from thirty-six to thirty-eight tons in the same time from four nets.

From reports received, interior waters are showing a marked increase from the plantings of yellow perch and pickerel and if the increase is continued these two valuable food and game fishes should in a few years be once more abundant in Pennsylvania.

A severe drought has prevailed throughout the greater part of the State since last May, completely drying up many streams and almost drying hundreds of others. On this account it appears likely that there has been widespread destruction among the brook trout. From what we can learn the same condition of affairs exists in other states, but if our information is authoritative the recovery in Pennsylvania will be more rapid than elsewhere and this is due, we believe, to the policy which the Department has always pursued of planting trout when they were from three to four months old instead of holding them until the summer or autumn.

As far as investigations of officers of the Department have gone it is apparently the two and three year old fish which have suffered the most severely from the drought. Many yearlings escaped while most of the fish hatched last winter seem to have come to little harm. Hence the work of restoration will begin with a good stock of fish which will be of a catchable size in 1910 and many in 1909.

In view, however, of the great destruction which must have occured, we strongly urge the Legislature to change the opening of the trout season from April 15 to May 1. The Department of Forestry has asked the latter date to be fixed on acount, they claim, of the liability of early spring forest fires, and this, if correct, is an additional reason for the change which we recommend

The shad season in the Delaware river opened with fine prospects, water conditions were nearly perfect and an unusual number of shad were taken in the nets. Unfortunately, this condition did not prevail for more than two weeks when cold weather set in followed by numerous heavy rains and storms which made the river very muddy.

The cold and muddy water at once reduced the catch so that at the end of the season it is doubtful whether many more shad were caught than the previous year. There was, however, a marked increase in the number of ripe fish secured by the spawn-takers enabling the output at the Torresdale hatchery to be nearly doubled.

Early in the summer the Department received formal notice that the United States Government and Great Britain had, through the Secretary of State and the Prime Minister, signed a treaty under which it was proposed that the two governments take over the control of the fisheries in all the boundary waters which of course includes the Great Lakes.

We suppose this action was not taken without the National authorities having made certain of the right of the National Government to take to themselves rights which the states have hitherto enjoyed. The taking over by the two Governments of the control of the fisheries in such waters will undoubtedly have one resultant benefit, namely, uniform fishery laws which has hitherto been impossible by said action.

The fish protective work of the Department has been very satisfactory. In all there were 584 arrests made, 485 convictions secured and 96 acquittals. Of the convicted persons only 54 went to jail in lieu of paying their fines. Fifty-six defendants asked for appeals to the Court of Quarter Session, of which the greater number were granted. This latter fact disposes effectively of the claim made in some quarters that a man convicted under summary proceedings cannot appeal. Of the 584 arrests, 211 were made by the regular salaried wardens, 346 by the specials, 27 by the State police and constables. The work of the regular wardens is to be especially commended and it shows that they conscientiously performed their duties, for no part of the fine is received by them, their sole compensation being their salary.

Marked progress was made in reducing that form of water pollution which in injurious to fish life. A decision of the Superior Court having clearly set forth the jurisdiction of the Department over such pollution, the work of abating this form of evil was made such easier. It gives the Board much pleasure to state that almost without exception the industrial establishments visited by the regular wardens showed commendable disposition to devise means of preventing deleterious material from emptying into streams to the destruction of fish

The acquisition of the Department of Fisheries' boat, the Commodore Perry has been of great value to the Department's work. Through it nearly all forms of illegal fishing in Lake Erie within the jurisdiction of Pennsylvania have been suppressed, and what is more important it has enabled the Department to do far more fish cultural work. Through the ownership of the Commodore Perry, 9,600,000 eggs were obtained from the Canadian waters which otherwise would never have been received or saved at the hatchery, and far more herring eggs were gathered in Pennsylvania waters than would have been the case had there been no boat, and the same may be said of the blue pike egg collection.

Possessing as we do the Commodore Perry we were enabled to make arrangements for another year which should vastly increase the egg take. One important incident which was made possible by the possession of the boat was the seizure in the early autumn of twenty-

one undersized meshed nets belonging to a non-licensed New York citizen which were set in Pennsylvania waters. Prior to the possession of the Commodore Perry it was the habit of many fishermen of other states who possessed nets unlawful in their own waters to bring them into Pennsylvania waters and fish them with impunity. This evil practice has been entirely broken up.

There have been many improvements and extensions on the hatcheries. Several new ponds were constructed at the Crawford Hatchery, one especially for catfish and the others for fry of bass and other warm water fishes. A hatching house for field work seventy feet by thirty-two was built at the Union City Hatchery by the employees and without any outside asistance. Several large fry ponds were also built at this point. All the old ponds at the Corry Hatchery excepting four or five have been remodeled. The rotted board sides were removed and replaced by concrete or tiled sides. A dyke over 500 feet long was built along the creek at the Spruce Creek Hatchery to prevent flooding, and a number of additional trout pounds were built. A number of very fine ponds were also constructed at the Bellefonte Hatchery. This station was established only five years ago yet to-day there only remains about eight or ten ponds to be built to complete one section of that plant, and these it is designed to complete during the coming year.

Both the Spruce Creek and Bellefonte Hatcheries were visited by extraordinary heavy floods in April and May with resultant loss of over 20,000 fingerling, yearlings and two year old fish. There has not been a flood at the Bellefonte Hatchery possibly for twenty years and the one which visited it in early May was caused by a cloudburst in Pleasant Gap Valley through which no stream flows, hence it was a disaster which could not well have been avoided or anticipated. Several new ponds were built at the Torresdale Hatchery. The hatching house itself was remodeled and a fine driveway built into the plant. It is the city of Philadelphia that the Department owes this beautiful drive. The City Property Committee gave permission for it to be cut through city land adjoining the hatchery and the Department of Public Safety authorized the use of the House of Correction labor, and gave the foundation stone and filling from the waste stone of that institution, so that practically the only cost to the Department was the surfacing. Even the huge stone roller was loaned by the city. Electric lights are particularly needed at this station. Unless they are installed it will be necessary to employ a night watchman to prevent the stealing of fish from the ponds. The trout ponds at the Wayne Hatchery were all remodeled and made permanent, and a three acre yellow perch pond begun and carried to a point where it can be used.

We would like to draw special attention to the growing importance of the field work of the Department, that is to say the gathering of eggs from fish caught in the commercial nets and of spawn naturally deposited by fish in a wild state. In the first instance if the eggs were not collected every one would have been lost, and in the second place it is estimated that not more than five per cent. would have escaped destruction by spawn eating fish. Of the output of nearly 650,000,000 during the year all but about 51,000,000 were the result exclusively of field work, and of the 51,000,000 a large percentage was due indirectly to field work. In spite of these huge figures only a small proportion of the great waste which exists is saved owing to

the inadequacy of the funds provided. It costs about $40,000 a year to operate the hatcheries using the most rigid economy. It would cost little, if any more, to nearly double the output through field work. For this reason we hope that the appropriation for field work will be largely increased to enable the Department to save more of the eggs which are now being lost and to operate the hatcheries on a much larger scale, which, as we have said, can be done without an appreciable increase in cost.

The above is respectfully submitted.

W. E. MEEHAN, President.
JOHN HAMBERGER,
HENRY C. COX,
ANDREW R. WHITAKER,
W. A. LEISINRING.

REPORT OF THE COMMISSIONER OF FISHERIES.

The work of the Department of Fisheries ending November 30, 1908, was on even a broader scale than the previous year although it was hampered somewhat near the close by a lack of ample funds. Indeed the sum at the disposal of the Department was such that on the last days I was compelled to issue an order that all expenditures during the close of the fiscal year should be confined to the fixed charges and the necessary messenger expenses in the transportation of fish. Improvements were made during the year in all the hatcheries and in the newer establishments some extensions completed, extensions which should result nex t year in a greatly increased output of fish.

Interest in the fish cultural work of the State is steadily growing among the people and this sentiment has been made plainly manifest by letters and newspaper publications. The beneficial results of the five year's work of the Department are becoming very apparent and there is reason to believe that if the work of fish culture continues to expand in the next five years as it has in the past five that before long fishing of all kinds will be nearly as good as it was in Colonial days.

The total output of fish was 661,952,851 as against 663,387,524 in 1907. This is a reduction of 1,434,673. The fall off was due to lack of financial means to gather the full quantity of yellow perch and pickerel eggs and a fall off in the quantity of the wall-eyed pike eggs gathered from Lake Erie. Had it been possible to have collected the same quantity of yellow perch and pickerel eggs as in 1907, the output would have been over 800,000,000. There was a gratifying increase in the output of black bass. In 1907 there were 87,663 small mouth bass distributed. In 1908 the number was 355,285. The output for the year 1908 in detail follows:

OUTPUTS.

The following table exhibits the outputs of fish, frogs and aquatic plants from the various hatcheries and through field work from December 1, 1907, to November 30, 1908: The table does not include eggs shipped from one hatchery to another

Brook trout, fingerlings,	7,818,000	
Brook trout, year old,	200	
Brook trout, two, three and four year old,	14,475	
Total,		7,832,675
Rainbow trout, fingerlings,	215,000	
Rainbow trout, four year old,	400	
Total,		215,400

Goldfish, yearlings,	3,954	
Total,		3,954
Catfish, fingerlings,	268,450	
Catfish, adults,	208	
Total,		268,658
Brown trout, fingerlings,	50,000	
Total,		50,000
Shad,	9,676,000	
Total,		9,676,000
Sturgeon, adults,	4	
Total,		4
White bass, adults,	56	
Total,		56
Lake Trout,	643,790	
Total,		643,790
Pickerel,	193,705,000	
Total,		193,705,000
Silver Side Salmon, advanced fry,	90,000	
Total,		90,000
Yellow Perch, fry,	176,762,100	
Yellow Perch, Adults,	2,385	
Total,		176,764,485
Sunfish, fingerlings,	533,000	
Sunfish, adults,	550	
Total,		533,550
Calico bass, fingerlings,	16,000	
Calico bass, adults,	40	
Total,		16,040
Frogs,	654,000	
Total,		654,000

Blue Pike,	96,250,000	
Total,		96,250,000
Lake Herring, fry,	17,802,000	
Total,		17,802,000
White Fish, fry,	54,114,800	
Total,		54,114,800
Wall-eyed Pike fry,	102,957,500	
Total,		102,937,500
Black Bass, small mouth, fingerlings,	354,950	
Black Bass, small mouth, adults,	335	
Total,		355,285
Black Bass, large mouth, fingerlings,	23,500	
Total,		23,500
Rock Bass, fingerlings,	16,000	
Rock Bass, adults,	154	
Total,		16,154

SUMMARY

Brook Trout,	7,832,675
Rainbow Trout,	215,400
Goldfish,	3,954
Catfish,	268,658
Brown Trout,	50,000
Shad,	9,676,000
White Bass,	56
Sturgeon,	4
Lake Trout,	643,790
Pickerel,	176,764,485
Silver Side Salmon,	90,000
Yellow Perch,	176,764,485
Sunfish,	533,550
Calico Bass,	16,040
Frogs,	654,000
Blue Pike,	96,250,000
Lake Herring,	17,802,000
White Fish,	54,114,800
Wall-eyed Pike,	102,937,500
Black Bass, small mouth,	355,285
Black Bass, large mouth,	23,500
Rock Bass,	16,154
Total,	661,952,851

APPLICATIONS FOR FISH.

The following is the number of applications for different species of fish filed with the Department of Fisheries and sent to the different hatcheries to be filled:

Brook Trout,	3,213
Rainbow Trout,	17
Brown Trout,	5
Small Mouth Black Bass,	459
Yellow Perch,	486
Pickerel,	459
Wall-eyed Pike,	224
Sunfish,	302
Catfish,	104
Frogs,	135
Rock Bass,	13
Lake Trout,	5
Total,	5,432

PERMITS ISSUED.

The following permits were issued during the year for the purposes named:

For bonded seines for taking carp, suckers and mullets,	47
For using dynamite for engineering purposes,	14
For taking fish for scientific purposes,	4
For removing carp and suckers as deleterious fish	10
For taking gold fish for aquarium,	1
For taking fish for aquaria,	2
For drawing off dams,	6
For transplanting fish to other waters,	16
For taking trout for spawning purposes,	1
Total,	101

COMMERCIAL FISH INDUSTRY ON LAKE ERIE.

The condition of the fisheries on Lake Erie within the limits of Pennsylvania is exceedingly healthy. Fish were caught in unparalleled numbers, at times far beyond the capacity of the warehouses to hold them. On several occasions tons of herring had to be given away. The neighboring states of Ohio and New York and the Canadian fishermen opposite Pennsylvania shared in the abundant catch, though to a lesser degree than the Pennsylvanians.

The total value did not reach the same figures as in 1906 but the catch greatly exceeded it, it being within about only 132,000 pounds less than the catch of 1903, when weather and labor conditions permitted a phenominal catch The cause of the lessened total value was partly through a fall in prices due to the heavy catch especially in September and October, although the catch and the money value would have gone far beyond any previous year had it not been for two circumstances

First, there was a strike which lasted for more than six weeks among the fishermen and which tied up nearly everybody in the business. Second, a disastrous conflagration which destroyed the warehouses of A. Booth & Company and the Keystone Fish Company. The fire put the first named company entirely out of business for nearly two months, and the second for some weeks. In addition the fire destroyed the books of the Booth Company so that they were unable to render an accurate account of a full year's business to the Department and their returns therefore were several months short.

As these two concerns are the largest in the fish business in Erie, it will be seen that the fire played an important part in reducing the money value of the business. From all indications had there been no fire and no strike with a much lower price, the value of the industry would have greatly exceeded the figures set forth. The following is the table:

Name.	1903.	1905.	1906.	1907.	1908.
Blue pike,	1,964,000	3,215,863	1,021,206	2,159,983	2,606,357
Lake herring,	5,033,000	3,060,250	2,696,065	1,883,963	3,816,691
White fish,	36,500	31,969	113,278	574,265	394,763

The following table gives the value of the catch for the years 1903, 1905, 1906 and 1907:

1903,	$300,000.00
1905,	201,085.94
1906,	168,995.14
1907,	305,913.39

The catch for 1904 is omitted because in that year the Department was unable to get accurate data. The following table shows the total catch of fish and the value of each during the year 1908:

Name of Fish.	Number of pounds.	Value.
White fish,	394,763	$31,580 14
Lake herring,	3,816,691	90,108 07
Blue pike,	2,606,357	73,657 39
Yellow pike,	9,884	697 56
Yellow perch,	42,679	1,247 02
Miscellaneous,	123,927	2,982 35
Sturgeon,	3,700	555 00
Catfish,	1,050	42 00
Total,	6,999,051	$200,869 53

A very significant feature of the catch is the white fish which reached 394,763 pounds, or nearly four times what it was in 1906. Twelve times greater than in 1903 or 1905. It was less than in 1907 for the two reasons given, namely, the fire and the strike. No greater evidence can be furnished of the restoration of the white fish industry in Lake Erie and the value of the artificial propagation of that fish. In 1907 and 1908 boats were equipped exclusively for the capture of white fish a thing which had not occurred before for many years.

Another evidence of the great supply of fish in Lake Erie was the catch of lake herring which amounted to 3,816,691 pounds or more than double what it was in 1907, and 1,200,000 more than in 1906 and 800,000 more than in 1905. The blue pike catch of 2,606,357 pounds was nearly a million pounds more than 1907, more than double that of 1906 and nearly double that of 1903, though a little less than 1905.

There was a marked increase in the catch of yellow pike, more properly speaking, pike-perch, and for the first time in several years it was worth while to separate them from the miscellaneous fishes and give them a separate place in the table. The catch was 9,884 pounds.

Yellow perch had been rapidly decreasing when the Department, about four years ago, began propagating the fish and heavily stocking the lake. Signs of a restoration came in 1907 but not sufficient to class the fish by themselves in these tables, but this year 42,679 pounds were caught. There were less miscellaneous fish because the fishermen gave more attention to the more valuable food fishes.

The value of artificial propagation can not be disputed but the large percentage of money value return to the people in comparison with the money expended by the State has seldom been considered. Under the circumstances I feel justified in publishing herewith a letter sent to the Department by a member of the firm of the Keystone Fish Company, the contents of which were practically repetitions of remarks made by the writer in an address to the Superintendents of the Department at the last annual gathering in Harrisburg

Erie, Pa., Feb. 11, 1909

Honorable W. E. Meehan,
Harrisburg, Pa.

Dear Sir:—In the year 1905 our firm handled a total of 2,680,222 pounds of fish, of which none were white fish. The average selling price for that year was $5.36 per 100 pounds.

In the year 1906 we handled 1,381,149 pounds, of which none were white fish and disposed of same at an average price of $6.45 per 100 pounds.

The following year, 1907, we had altogether 3,506,504 pounds of which 141,409 pounds were white fish. The average selling price for that year, exclusive of white fish, was $5.23 per 100 pounds; and in 1908 we received a total of 3,336,001 pounds of which 147,912 were white fish, which sold at an average of $4.39 per 100 pounds, exclusive of the white fish.

In order to make a just comparison, the selling price of white fish during 1907 and 1908 to be deducted, as none were caught during the two preceding years. White fish command a higher figure than the other lake food fishes, such as herring, blue pike and perch.

While the aggregate amount of fish handled by us during 1908 shows a falling off of about 170,000 pounds, this shortage is to be attributed to a strike which lasted for five weeks, during the best part of the fishing season, and also to the fire which destroyed our plant in June last, thereby preventing us from handling fish while the new buildings were in process of construction.

The lower prevailing selling price for last year was caused by the great abundance of lake herring, the supply of which had shown a decrease from year to year until last year, when the enormous quantities of herring artificially hatched had obtained a marketable size.

It will be seen from the foregoing that at an average difference of 84 cents per 100 pounds between the years 1908 and 1907 the total diffference on the amount we handled that year will amount to $28,000.00.

As we handled approximately two thirds of all the fish brought into the port of Erie, and considering that our competitors must have experienced the same results, it will show a total difference in selling price out of Erie of about $70,000.00 for the year 1908.

Comparing these figures with the amount appropriated to your Department and expended for the purpose of propagating lake food fishes, approximately $17,000.00 per annum, will show a direct pecuniary benefit of 400 per cent. to someone.

This benefit indirectly reverts to the consumer.

It is in my opinion not extravagant to claim, judging from the actual results obtained through the operations of your Department, that the Department of Fisheries is second to none of any Department of the Commonwealth, looking at it from a commercial side alone.

Respectfully yours,
H. Heinrich, Jr.

GATHERING ICE FOR THE FISH HOUSES AT ERIE.

Erie, Pa., Feb. 11, 1909

Honorable W. E. Meehan.
Harrisburg, Pa.

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Respectfully yours,
H. Heinrich, Jr.

GATHERING ICE FOR THE FISH HOUSES AT ERIE.

COMMERCIAL BROOK TROUT INDUSTRY.

Although the Act of 1901 does not give proper encouragement to the commercial brook trout industry, indeed hampers it, there has been a remarkable increase in its value, at least as far as can be judged from the reports in the past. In 1907 there were five establishments in Pennsylvania which made returns and their aggregate gross business was $38,396.72, an increase of $8,445.72 over the returns for 1906, the last data secured. The following is the tabulated statement of business transacted by the five establishments in 1908:

	Pounds.	Number.	Value.
Dead fish for market,	36,451		$24,100 75
Fry and fingerlings,		1,032,358	9,841 37
Eggs,		10,359,200	4,454 60
Total,	36,451	11,391,558	$38,396 72

In addition to the annual sales two of the establishments presented 750,000 eggs to the State. At the time of making report to the Department the various establishments had on hand nearly 50 tons of fish fit for the market, besides more than one million fingerlings and advanced fry. There are many places in Pennsylvania suitable for rearing trout for the market and with a little encouragement there is no doubt that other establishments would be founded and as there is a ready market, not only in this but adjoining states for this fish, a very valuable industry could be built up. It is my intention to again introduce at the forthcoming session of the Legislature a bill for the encouragement of commercial trout hatcheries.

COMMERCIAL FISHERIES OF THE SUSQUEHANNA.

I regret to say that the commercial fisheries of the Susquehanna river within the confines of Pennsylvania during 1908 were so small as to be scarcely worth considering. The partial construction of the great McCall's Ferry dam, has, I fear, practically wiped out the shad industry and the great drought which prevailed made the catch of eels very small, while the market value of carp and suckers was so evidently trifling as to make it not worth while to undertake to gather statistics. It is doubtful if the entire business of the river could be valued at $20,000.

2—22—1908

DELAWARE RIVER.

Owing to the pressure of other work I was unable this year to collect the statistics for the Delaware river, but from what I can gather the total value of the shad, herring and miscellaneous fishes was a little better than in 1907. This was not due so much to a larger catch but to higher prices which the fishermen obtained for their shad. The value of the shad industry was variously estimated by fishermen to be between $200,000 and $300,000. The season opened auspiciously. Good catches were made in both the shore and gill nets and the water temperatures were favorable for continued large catches, but early in May there came a series of heavy storms which muddied the river to such an extent as to practically ruin the catch for the rest of the season

FINANCIAL STATEMENT.

The following is a statement of the receipts and expenditures of the Department of Fisheries for the year ending November 30, 1908:

HATCHERIES.				
Received from the State Treasurer,	$44,223 27			
Balance on hand from Lake Erie licenses,	91 56			
Balance on hand from fines for violation of fish laws,	503 22			
		$44,818 05		
Paid for hatcheries,			$44,223 27	
Balance on hand,				$594 78
WARDENS.				
Received from State Treasurer,	$9,687 27			
Balance on hand from eel licenses,	49 23			
		$9,736 50		
Paid for wardens,			$9,687 27	
Balance on hand,				$49 23
CONTINGENT FUND.				
Balance on hand Nov. 30, 1907,	$53 55			
Received from State Treasurer,	1,000 00			
		$1,053 55		
Paid for incidental expenses,			$996 79	
Balance on hand,				$56 76
EXPENSES OF FISHERIES COMMISSION.				
Received from State Treasurer,	$1,028 10			
Paid for expenses,			$1,028 10	
COUNSEL FEES AND COURT EXPENSES.				
Received from State Treasurer,	$1,081 37			
Paid for fees and expenses,			$1,081 37	

FINANCIAL STATEMENT—Continued.

DEFICIENCIES.				
Balance on hand Dec. 1, 1907,	$592 85			
Paid for various items,			$429 14	
Balance on hand,				$163 71
LAUNCH FOR LAKE ERIE.				
Received from State Treasurer,	$5,940 00			
Paid for launch,			5,885 00	
Paid for fitting,			55 00	
				$5,940 00
MAINTENANCE OF LAUNCH.				
Received from State Treasurer,	$1,820 59			
Paid for maintenance,			$1,820 59	
COMPLETING HATCHERIES.				
Received from State Treasurer,	$151 55			
Paid for work,			$151 55	
FIELD WORK.				
Received from State Treasurer,	$3,420 79			
Paid for field work,			$3,420 79	

During the year there were receipts from fines and licenses as follows, the same being paid into the State Treasury daily in accordance with the statute:

Fines for violation of the fish laws,	$3,794 00
Licenses for eel baskets,	840 50
Lake Erie licenses,	1,315 00
Total,	$5,949 50

There were 1,002 licenses returned by the County Treasurers as having been issued by them but this does not cover the whole number as several Treasurers have failed to make returns or did not do so until after the end of the year, in accordance with the provisions of the act of May 29, 1907.

CORRY HATCHERY.

The work of reconstructing the dilapidated trout ponds at the Corry Hatchery was continued and nearly completed. Most of the ponds have been in use for a quarter of a century and in that time had very little repairs. The sides were of boards, and as the surrounding ground is mucky the condition of each pond was deplorable. They were exceedingly unsightly and had reached such a state that scarcely half of the normal number of fish could be maintained therein. Those rebuilt this year as last had their sides rebuilt of concrete and building tile and should last for many years. The output of trout was 4,000,000 and as usual when the shipping time arrived were strong healthy fingerlings. An ice house was built and a number of minor repairs made to the hatching house.

For the first time in twenty-four years a spring close by the Assistant's house diminished in volume to such an extent that the fish in the ponds supplied therefrom had to be transferred to other quarters. The springs which supplied the three hatching houses also appreciably diminished in flow. This is not an uncommon occurrence with the spring which supplies the No. 2 house, but strange to say this particular spring did not diminish in volume in the same ratio as the others. The cause of the diminished flow was, of course, the unusual drought which prevailed.

ERIE HATCHERY.

The Erie hatchery is a field station, that is to say one in which its supply of eggs is dependent entirely upon fish caught in the nets for commercial purposes or eggs naturally deposited by fish and gathered by employes of the Department. The annual outputs are consequently always very large but this year it broke all previous records by several millions, the total output being 247,752,300 fry and frogs. Of these 44,614,800 were white fish, 16,302,000 lake herring, 70,312,500 pike perch, 96,250,000 blue pike and 20,225,500 yellow perch. The blue pike hatch was very many millions in excess of any previous output.

The hatching house is in a dilapidated condition. It is of frame and has been in use for nearly 35 years. A new building will have to be erected within two or three years. An additional piece of ground and a dwelling for the use of the Superintendent is necessary. While the eggs are hatching in this station the close proximity of the Superintendent at all times is imperative, yet he lives in a rented building about six squares from the hatchery

TORRESDALE STATION.

The Torresdale Station is located in Philadelphia on the banks of the Delaware about ten miles from City Hall. Although mainly a field station its seven acres of land beyond the banks are covered with ponds for black bass, yellow perch, catfish and Lake Erie sun fish. The batteries have a capacity of 540 jars and from the station there were turned out during the year, 109,191,900 fish and frogs of which the following is the summary:

Pike-perch	8,700,000
Bass	53,500
Goldfish	3,900
Shad	9,676,000
Yellow Perch	46,275,000
Pickerel	44,040,000
Tadpoles	114,500
Catfish	138,000
Sunfish	191,000

Most of the yellow perch eggs were taken from the breeding pond on the hatchery grounds. The chain pickerel were from the field in Wayne county and the pike-perch from the field in Lake Erie, and the shad eggs from the Delaware River.

Owing to the slimness of the appropriation it was impossible to cover the shad work on the river thoroughly and the eggs which resulted in the fry planting were only secured by prolonged labor and the co-operation of some of the fishermen. Active experiments in sturgeon culture were conducted and although no eggs were secured it was found possible to impound smaller natural sturgeon of the short-nosed species. It was also found that in order to secure eggs and milt simultaneously it was necessary to have at least three males to one female, and an effort to have this proportion will be made next year. Complete success was had in bass, catfish and sunfish culture. Experiments in fresh water terrapin culture were not followed with success the creatures failing to deposit any eggs. This it is believed was because of improper surroundings for them.

Through the courtesy of Director Clay of the Department of Public Safety a gang of House of Correction laborers was sent to the hatchery and a beautiful driveway built from City Avenue into the grounds. The plans for the driveway were drawn by Chief Webster of the Bureau of Survey and plans for the construction of the road through the City property were given by Chief Isenhour of the Bureau of City Property. After the driveway was finished trees were planted along each side. The floor of the hatching house was lowered and concreted. The last piece of work was done on account of the board flooring beginning to sag and throwing the battery out of plumb.

WAYNE STATION.

Wayne Hatchery partly a field and partly a pond culturial establishment annually turns out a vast number of fish. Its output this year was 219,759,000 of which 127,750,000 were pickerel; 80,356,000 were yellow perch; 1,152,000 were brook trout and 264,000 were black bass. The other species were silver salmon, rainbow trout, tadpoles and frogs, lake trout, wall-eyed pike, bull-heads and catfish and rock bass. A new hatching house will have to be built before another year passes. The present house is only 60 feet long and 32 feet wide, consequently a large proportion of the trout hatched must be cared for in the advanced fry stage in troughs out doors. This entails hardships on the men on account of the terrible severe winters. In addition to the troughs for trout in this small house there is a battery with a capacity of 200 jars and when the battery is in operation some of the trout troughs have to be removed. The foundation of a commodious additional building 40x60 feet was laid and it is hoped the building can be constructed next summer. Four trout fry ponds with concrete bottom and sides fifty feet long and four feet wide were built and the grounds around them graded and sodded. One hundred and fifty feet of concrete retaining walls were also built on both sides of the Lackawaxen Creek along the borders where the

trout ponds were built. A reservoir of over three acres in extent, which will also be used as a breeding pond for yellow perch, was started and partially completed. When the reservoir is completed it will be possible to throw water to any part of the grounds without having to continue a dam across any part of the Lackawaxen Creek. All the work done was by the regular employes of the Department.

BELLEFONTE STATION.

A cloud burst or rather a series of terrific down pours in quick succession occurred the latter part of May in and around Pleasant Gap burying the ponds on the lower part of the Bellefonte Hatchery under a depth of a foot and a half to two feet of water allowing 10,000 adult trout to escape A curious feature of this calamity is that with the exception of a small spring run which has its rise outside of the hatchery grounds there is no stream in the valley in which Pleasant Gap Valley is located. The earth on the mountain sides being unable to take up the rainfall the water poured down over the surface into the valley and thence down and over the hatchery grounds. The last similar storm occurred almost simultaneously with the down pour which resulted in the Johnstown disaster. A dyke has been built since this last storm so that in the future the hatchery grounds cannot have another such a visitation.

The output of trout for the year was brook trout 2,336,000, and rainbow trout 195,000. In addition there were 2,350 catfish, some goldfish and a few adult brook trout sent out from the Bellefonte Station.

Experiments were conducted in domesticating silver salmon. Ten thousand hatched at the Wayne Hatchery were sent over for that purpose. The fish were very wild and the ponds had to be covered until they had become used to their new quarters and the men. The fish grew rapidly and less than a half dozen fish died.

As a consequence of the cloud burst the meat house was washed from its foundations and it was re-erected in another spot and a very large reservoir of concrete constructed to supply it with water. The new reservoir contains about 3,128 square feet of surface. Besides this eight new concrete ponds were built for the accommodation of trout each 35 feet long by 14 feet wide. Several ponds built five years ago with natural sides were concreted on account of muskrats boring in the natural banks.

Although the Bellefonte hatchery was only started in the summer of 1903 it now has 62 permanently built ponds with a total of 58,653 trout and salmon and other fish of different species retained for breeding purposes.

The two springs which supply the hatching house were not affected by the drought, there being no appreciable diminution in the flow. There was a lessened volume in the Logan Branch Creek which supplies most of the ponds but the diminished volume was not sufficient to affect the hatchery. Indeed the volume might have been still further decreased without harm

SPRUCE CREEK HATCHERY.

Owing to extensive deforestation on the hills in the neighborhood of the Spruce Creek hatchery there were several floods in Spruce Creek early in the year causing a loss of a large number of brood trout. Floods having occurred before, the hatchery force dropped other work and built a dyke from the upper end of the grounds to some distance below the present pond. Several large trout ponds were also built and all before the end of the year were well filled with stock trout promising a large take of eggs next year.

Despite drawbacks such as have been mentioned 759,000 trout fry were distributed. As the bass were in the midst of spawning, muddy water entered the pond and smothered all the eggs, hence the bass work on this station was a complete failure.

The flow of water from the spring was not diminished in the slightest degree by the great drought which prevailed throughout the State. The water flow in the creek was also nearly up to normal.

CRAWFORD STATION.

The year was a very successful one at the Crawford Station. The most notable was the great increase in the output of fish. In 1907 it was 162,750, and in 1908 it was 51,554,500. The increase was due to a hatching house being erected and one battery enabling the propagation of white fish, lake herring, pickerel and yellow perch.

With the regular force on the hatchery, two ponds one 160 feet by 70 and one 80 feet square were constructed and the upper northeastern corner of the grounds graded and a neat driveway built.

Shortly after white fish and herring eggs were placed in the house. In November the little stream which supplies the battery went nearly dry and the eggs had to be sent to the Union City hatchery. The main stream, however, maintained a sufficient flow of water, ample for not only the ponds in operation but for any others which might be constructed in the future.

Owing to a late season the bass work was hampered, yet nevertheless it may be considered as having been successful since 37,000 were distributed from one brood pond

ERIE AUXILIARY.

The Erie Auxiliary Station is designed primarily as its name implies as a contributor to Lake Erie, and 26,690,813 fish were sent out during the year. In the early part of the season there was no hatching house for jar work, but 26,820,000 yellow perch and pickerel eggs were hatched on trays the same as trout in the lake trout house, and

of the yellow perch eggs 5,100,000 were collected from brood fish in a pond on the grounds. Later a house modeled exactly like the Crawford hatchery was built and one battery installed and at the close of the year there were in the jars 13,680,000 white fish eggs and 9,680,000 lake herring in the house from the field in Lake Erie.

Although a number of mature bass died during the winter and early spring, 22,950 were hatched and distributed.

In addition to the battery house five fry ponds were built and the yellow perch pond greatly enlarged. The grounds occupied by the bass, yellow perch and sunfish ponds and a number of fry ponds were graded, driveways graveled, trees planted and the property beautified. One section of this hatchery may now be said to be completed with the exception of a concrete wall on each side of the stream which flows from the reservoir.

The great drought affected the hatchery seriously for a time. The water in the creek fell to an alarming stage. At this point the Union City authorities came to the rescue by flowing water from one of their reservoirs into the stream and so put the hatchery beyond danger.

FIELD WORK.

The bulk of the output from the State fish hatcheries is the result of field work or the gathering of eggs from fish caught in the commercial nets and which otherwise would have been lost, or from eggs of non-nest building fishes naturally deposited, the large bulk of which would have been destroyed by other fishes.

Among the first may be mentioned prominently the shad, white fish, lake herring, pike perch and blue pike, and among the latter the yellow perch and pickerel. Had they not been gathered and hatched the eggs of the first named fishes would have been lost or destroyed and it is estimated that of the latter fully 95 per cent. would have gone into the maw of fishes. Thus the 600,000,000 eggs gathered and hatched by the State last year was clean gain. So important has the field work become that at three stations only out of the eight no field work is performed.

The Erie hatchery is exclusively operated as a result of the field operations. About 99 per cent. of the work at Wayne is from that source, and with the exception of about a million fish, Torresdale is a field station.

Apart from the bass and other pond work the hatcheries at Conneaut Lake and Union City are field stations. Erie, Wayne and Torresdale are now working at their full capacity. The work at Conneaut Lake and Union City can each be increased two-thirds by the introduction of batteries in spaces which have been prepared for them in anticipation. The insertion of the batteries and an increase in the appropriation are all that is required to more than double the present annual output of over 600,000,000 fish. As a matter of fact the operation of the field work is only limited by the amount of money which the State can afford to expend, and it should be said that the expense is comparatively trifling. An addition of $20,000 a year would more than double the output of the present hatcheries without

doing more than the enlargement of two buildings and the installation of four batteries

To illustrate how easily the output can be increased on perch and pickerel alone, it is only necessary to recite the output of those two fishes for 1907 and state the source from which the eggs came. The output of pickerel was 193,705,000, of yellow perch fry 176,762,100. The eggs from which these fish were hatched were taken from less than 10 lakes in Wayne county, with the exception of about 45,000,000 yellow perch eggs, which were gathered from three hatchery ponds. The entire work was done by about a dozen men, four horses and within a month.

There are more than 100 lakes in Wayne county, as many more in Susquehanna and a number in Pike county, more or less easily accessible and of which vast quantities of eggs could be gathered and at no greater cost, fortunately than from the lakes operated on in 1907. Each lake in the counties named, if properly handled, would yield at least 200 quarts of eggs, some of them would give 700 to a thousand quarts of eggs each and when come upon they can be gathered at the rate of from 150 to 200 quarts per day

The entire field work of the Department for the years 1906 and 1907, exclusive of the pike-perch, white fish and shad, cost less than $4,000. Without adding up the figures, it is safe to say that in the two years over 700,000,000 eggs were gathered by the State for hatching on that small sum. The pike-perch and white fish eggs in addition cost in the neighborhood of $1,500 a year more, and the shad about $800, so that all the eggs gathered from the field numbering more than a billion cost the State less than $10,000 to put the fish into the hatcheries. With very little additional cost the white fish, herring and wall-eyed pike work could be vastly extended. The Canadian fishing grounds are open to Pennsylvania and with the aid of the State boat, the Commodore Perry, they could be readily gathered

In addition to egg gathering an important feature of field work is the seining of canals and other waters where for various reasons the lives of the fish become imperiled and their transference to safer waters. Many thousand trout and coarser fishes, like catfish, were thus handled in 1907

Experimental work is also a feature. The Field Superintendent, Mr. Nesley, for example, experimented with the artificial taking and hatching of sunfish eggs and met with success. Thousands of young black bass are annually saved and distributed through that means. One of the dangerous periods for black bass from cannibalism is the first fifteen days of their lives when they fall easy prey to minnows, yellow perch, shiners and other small fishes. It is believed that in that period fully 50 per cent. are destroyed. By carefully impounding the nests when the young are hatched in the lakes and holding the little fish in floating boxes for 15 days a large percentage is thus saved.

I believe the time is not far distant when it will be considered desirable to appropriate as much money for field work as for hatching. It should be said further concerning the wisdom that the cost of operating the hatcheries with a vastly increased output would not be very great The annual appropriation now for hatchery purposes amounts to about $40,000 a year for the eight stations with an output from them all of over 600,000,000 fish. The output could easily be doub-

led with an additional hatchery expense of not more than $2,000 per station after the plants were installed.

The effect of field work under exceptionally adverse circumstances, namely, weather conditions, is beginning to show on the Delaware river. For three or four years before the greatest number of eggs that could possibly be gathered from fish was only about 5,000,000, but in 1907 about 10,000,000 were gathered and indications point to a larger take in 1908 and the restoration of the shad fisheries on the Delaware to what they were between 1890 and 1900

FISH CAR.

A number of years ago the Legislature made an appropriation for the construction of a car for the purpose of transporting fish from the hatcheries to different places. Unfortunately the appropriations made were not sufficient to operate the car excepting on rare occasions when there were heavy shipments to one locality and most of the outputs of the hatcheries have to be carried in the baggage cars of the regular trains. The outputs have now reached such enormous figures that the Department will soon be compelled to use the car oftener and to ask for an appropriation with which to pay the mileage which the railroad companies ask.

The car is housed in a building constructed for its accommodation at the Bellefonte Hatchery and will have to be taken to the shops during the coming year to be repainted and have some minor repairs.

FISH EXHIBIT AT CONNEAUT LAKE.

The managers of the Agricultural Fair held at Conneaut Lake annually, erected a building and tanks and invited the Department to make an exhibit of fresh water fishes in 1908. As the exhibit entailed no expense beyond the transportation of fish and their care during the exhibition the invitation was accepted. Although the managers were unable to supply very much money the exhibit was considered one of the most attractive features of the entire show. The building for the four days was continually thronged with people. At times the crowds were so great that special officers were required to get the visitors into line and keep them moving along in front of the exhibit.

There could be no demonstration greater for the educational value of such exhibitions than the one at Conneaut Lake. There are few things more attractive to the average public than living fish, and the oftener that they can be examined by the public the more thoroughly interested and aroused the people will become concerning the value and importance of the fish industry of the State

A SPECIMEN OF MUSCALLONGE AT CONNEAUT LAKE.

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A SPECIMEN OF MUSCALLONGE AT CONNEAUT LAKE.

INJURY TO FISH FROM THE DROUGHT.

Last May there was begun a drought which for its extent and severity is said to have been unprecedented in the history of the State. In some sections from May until the last week in September there wasn't sufficient rain at any one time to settle the dust on the roads, and until the last week in September there was no general heavy rain in the State. In a few sections there were heavy local storms of short duration. As a consequence of the great drought which I understand extended into other states, streams in all parts of Pennsylvania became very low and a great number were dried completely almost from mouth to source with the exception of here and there a shallow pool. Many springs dried and very few maintained their normal flow. The upper Delaware river in October was scarcely larger than some of the medium sized tributaries in ordinary times, in fact in the neighborhood of Matamoras it was scarcely more than a creek. The west branch of the Susquehanna in places was almost dry from shore to shore. Streams like Bell Run and Tipton Run in Blair county were entirely dry for two or more miles above their mouths, and long stretches of the Conemaugh were also without water. Most of the mountain lakes were far below their normal height. Conneaut Lake in Crawford county on the first of December was more than two feet below ordinary low water level. In two of the hatcheries, Crawford and Wayne the water supply fell to danger point and at the latter station it was only by the greatest exertion that fish were kept alive in some of the ponds until rain fall, the latter part of September. At the Crawford hatchery the water supply for the hatching house dwindled to a point that there was not sufficient to supply the whole of one battery and on December first there was only just enough water from Conneaut Lake outlet creek to supply the ponds. The water supply at the Union City Hatchery also fell for a time to an alarming stage but fortunately the September rains restored the creek to nearly normal.

The great drought has undoubtedly wrought great havoc to fish life, particularly to the trout. Thus far the greatest loss of life seems to have been among the older trout, that is to say fish from two years old and over. Hundreds and thousands of mature trout as the waters fell made their way to pools where many remained until the waters fell to such a point that escape therefrom was impossible. As the water supply was small and the number of fish huddled in these pools were so large hundreds of them died. In one pool alone in a Wayne county stream, one of the employes of the Department, found fifty-seven dead trout of four inches and over. Death from lack of sufficient water has not been as great among fishes like black bass and pike-perch but large quantities have met their death through being caught, hence indirectly the drought has been harmful to even the warm water fishes. Small trout, that is, yearlings and less, did not appear to have suffered to the same extent as the older trout and they have apparently been able to sustain life in the small spring runs and in pools in larger streams. The extent of the disasters cannot be known before another year but enough is known to show that the work of the Department for the last five years in restoring trout

to the streams in Pennsylvania has been greatly injured by the drought and it is believed that it will tax the resources of the Department to the utmost for the next three or four years to restore the trout fishing to what it was in the spring of 1908

The number of employes at my command and the money available were not sufficient to save a large percentage of the fish. At the time the drought was at its worst in July, I had several field men in Wayne county and these were at once put upon the streams to save what fish they could. With the aid of the farmers living in the vicinity who freely gave their time and teams over 27,000 trout were taken from pools in which they would inevitably have died and transferred to safer waters. In the middle of September streams having reached an alarmingly low stage I sent a circular letter to all the Fish Protective Clubs in the State drawing their attention to the dangerous condition of the waters and the lack of facilities and funds for the Department to care for the fish and called for volunteers to make transfers of trout from dangerous to safer places. It is significant of the earnestness of these organizations that everyone responded and placed their services freely at the disposal of the Department of Fisheries. Fortunately just then there came two heavy rains which made the transfer unnecessary. Later, as all the streams were in good shape, it was not considered advisable to do anything.

One important feature of the great drought was its demonstration of the wisdom of the Department in planting trout of the early fingerling stage or from one to two inches in length. These little creatures for the most part survived the terrible ordeal, consequently there will be in the streams next year a good stock of yearling fish, giving the Department at least one year's start in the work of replenishing.

FRY AND FINGERLINGS.

Up to two years ago a good percentage of the office mail contained letters in which the writers expressed the opinion that the Department was making a mistake in shipping what they called fry trout, instead of sending out fingerlings three or four inches long or fish as many expressed it, "better able to take care of themselves," when being planted. Letters of this character are now comparatively rare, but the number of correspondents who approve of planting young fish has appreciably increased. It is not uncommon for writers to state that they have been converted to what is commonly known as fry planting but as there are still a few people who believe that it would be better to hold fish in the hatcheries until the autumn, I think it well to again present the reasons why the Department pursues the course it does with reference to the size of the fish. Those who still hold to the larger fish cite the trout which comes into Pennsylvania from the United States Hatcheries. While it is true that most, if not all the trout sent by the United States Government into Pennsylvania are larger than those sent out from the State Hatcheries, there are but a few weeks difference in their age; the difference in size is due chiefly to their being hatched in water the temperature of which is a little higher than in the hatcheries of Pennsylvania. Moreover, while the fish sent into Pennsylvania are larger, by far the greatest number hatched by the United States Bureau of Fisheries is distributed at even an earlier age than does Pennsylvania. To understand more fully the truth of this, it is necessary to repeat the fact that under regulations adopted by the American Fisheries Society in 1905 and endorsed by the National Government and states, fry are declared to be fish with the sac not absorbed. Advanced fry are fish with the sac absorbed but less than one inch in length. Fingerlings are fisir one inch in length and over, but less than a year old. Yearlings are fish of one year old and over. The National Government distributes more than half its trout in the fry stage or with the sac not absorbed. Several other states distribute in the advanced fry state. Of the some 7.500.000 trout distribute by Pennsylvania at least 6,000,000 are fingerlings and of the 1,500,000 advanced fry the age is exactly the same as the fingerlings but are smaller on account of the very cold water in which they are hatched. The trout which are planted by the State are from three to four months old and they are planted in the streams just before the natural food in the shape of insect life begins and before the little fish have begun habituated to artificial food in the hatcheries. If trout are kept until autumn they must necessarily be fed exclusively on artificial food, like liver and thick milk, and when planted the natural food is beginning to disappear and being accustomed to artificial food do not know how to seek their food and hence the fish become weak and starved and fall easy prey to their enemies. If fish are properly planted according to the directions of the Department, that is to say not in the streams which they are expected to be caught but, in the little side runs and scattered along a much larger percentage will reach maturity than would be the case from a smaller number of fish planted in the fall of the year. This condition has been proved absolutely and is not theory .

SILVER SALMON.

I feel very much encouraged in the efforts I am making with the assistance of the United States Bureau of Fisheries to establish silver side salmon in the Delaware river. Several interesting facts give rise to the hope that this splendid and valuable food fish of the Pacific slope may eventually find a home in our eastern waters. Early in the year I received from one of the hatching stations, belonging to the United States Bureau of Fisheries, in the state of Washington, about 100,000 silver side salmon eggs. There was scarcely any lost and the troughs in the hatching house at Wayne were soon occupied by strong active fish.

The first strong hope of ultimate success was felt when it was found that the advance fry fed freely and even greedily. After the fish had attained fingerling size which they did with extraordinary rapidity, a few thousand were retained in the hope that they could be reared to maturity in the hatchery ponds. This stock was divided, one half being retained at Wayne and the other half sent to Bellefonte. They did equally well in both places. At the age of six months the salmon averaged four and a half inches in length. At the age of ten months

the fish in the Bellefonte hatchery were from six and a half to seven inches long. In both stations there was no falling off in the appetite of the fish. They ate all the food that was given them.

The percentage of loss was phenomenally small, much less than among brook trout. The fish were not only healthy, but evinced remarkable activity and are remarkable leapers. It is not uncommon to see silver sides, now yearlings, leap two and even three feet, and on two or three occasions have either landed in other ponds or on the bank. Some half dozen or more have been lost by not falling back into the water. It is probable that the silver sides in confinement are making a growth equal to that in their natural environments.

If silver side salmon can be held successfully in ponds for 12 months there is reason to believe that they will thrive equally well in the streams in which they were planted since the water is of the same character. That some at least are alive was proven by the fact that in July, 1908, two were caught by trout bait fishermen in the Lackawaxen creek, Wayne county. They were between five and six inches long and were sent in to the hatchery for identification.

These two fish, however, were the only ones that were seen or heard of either in the Lackawaxen or the Equinunk, the two creeks into which about 80,000 fingerlings were planted. This, however, is not to be considered as discouraging because they would hardly have been large enough to generally take the hook by the time the trout season closed and by the time of the opening of the trout season in 1910. If their habits are the same as the Atlantic salmon, they should have worked out of the two streams named and into the Delaware river. The fact that two fish were caught is another point which strengthens the hope that silver salmon may successfully be introduced into the Delaware.

Those who may take an interest in the experiment need not however, expect a very heavy return in the river when the fish have reached maturity, because a planting of 80,000 fingerlings is very small. Only a very small percentage can possibly be expected to pass successfully through the many perils of creek, river and ocean life. If at the end of four years when silver side salmon may be expected to re-enter the Delaware as adults, if the nets take up a dozen or more fish it is as much as may be looked for. Should any appear it will prove that by heavy stocking the fish can be established. If the fish now in the hatchery ponds continue to grow as they did in 1908, the problem of a supply of eggs for heavy stocking purposes will be solved. In the meantime a second consignment of eggs will be received from the United States Bureau of Fisheries this winter.

THE COMMODORE PERRY.

The need for a staunch sea going boat for fishery work on Lake Erie was felt from the very beginning of the Department, both as a medium to enforce the fish laws on the lake within the jurisdiction of Pennsylvania and for the fish cultural work.

Fishermen from New York, Ohio or Canada could fish in our waters with impunity without paying a license or use any size mesh they

DEPARTMENT OF FISHERIES' STEAM TUG, THE COMMODORE PERRY.

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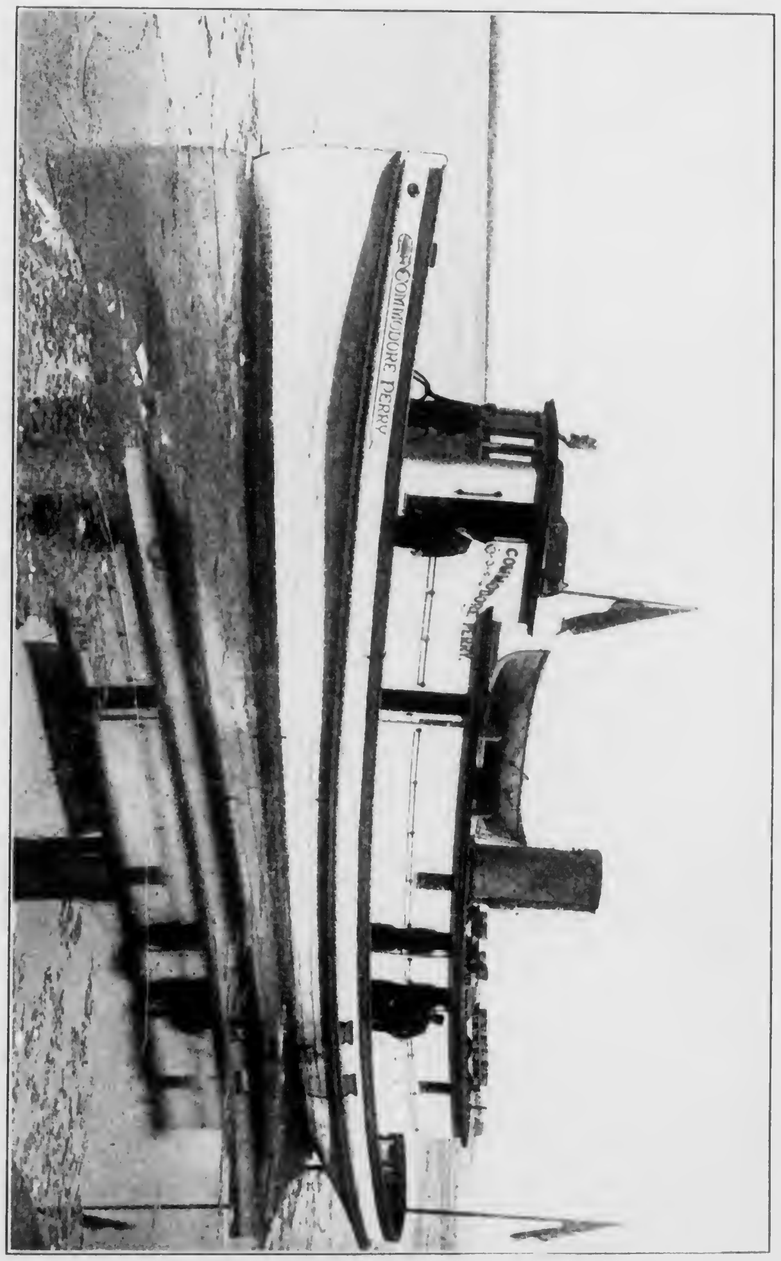


DEPARTMENT OF FISHERIES' STEAM TUG, THE COMMODORE PERRY.

pleased without much fear of capture. The Legislature at its session in 1907 appropriated six thousand dollars for the building of a suitable tug for the use of the Department of Fisheries. As soon as the money was available I took steps to have the craft built. In order that there should be no mistakes made I called to my assistance the Honorable A. E. Sisson, Senator from Erie county, and on his recommendation I appointed an honorary committee to assist me in drafting specifications for a staunch vessel, the cost of which would come within the appropriation.

The gentlemen forming this honorary committee were Mr. Herbert J. Knight, of the A. Booth Company, Mr. Henry J. Hinrichs, of the Keystone Fish Company, Mr. John Hamberger, Mr. John French, Secretary of the Fishermen's Union, and Mr. Jerry Driscoll, a practical fisherman. All are members of the Erie Chamber of Commerce.

A number of meetings were held with the result that specifications were prepared, bids were invited and a contract awarded to Paasch Bros. for a boat 70 feet long with 14 foot beam and a speed of not less than ten miles an hour. The contract price was $5,885. The boat was completed within contract time and was one foot longer and one foot greater beam than the contract called for and at the speed trial made more than one mile beyond that which was called for.

At the suggestion of Governor Stuart the boat was named the Commodore Perry and was christened and launched April 21, 1908. There was a large gathering of guests who were entertained by the contractor. Miss Minnie Maher christened the boat. It was successfully launched at three o'clock in the afternoon and the event was followed by a number of addresses. Honorable John Hamberger, one of the Board of Fishery Commission, presided in my absence on account of sickness, and Commissioner A. R. Whitaker read an address prepared by me. Senator Sisson was the next speaker. He said:

"Gentlemen of the Fish Commission, Fishermen of Pennsylvania, Ladies and Gentlemen:

"This occasion, the launching of this splendid boat, constructed by the State of Pennsylvania and destined to be used by the Department of Fisheries of the State in developing the fishing industry at this port, and increasing the supply of food fish for the use of the people of the Commonwealth and country, marks an epoch in the history of that industry in these waters. The rapid return of the fishing industry to its former condition of prosperity and plenty being made through the medium of artificial propagation, so effectively operated by the Fish Commission of the Commonwealth (of which Mr. John Hamberger is a member), under the guidance of Mr. William E. Meehan, the skilled and energetic Fish Commissioner, and with his recommendation, has enabled us to secure from the Commonwealth an appropriation in addition to that necessary to maintain the hatcheries that turn their constantly increasing output into the lake, sufficient to build this fine boat and man and maintain it for one year—thus making necessary an appropriation at each session of the Legislature for that purpose.

"This will enable the Department of Fisheries to operate to a much greater advantage by making it possible to gather a greatly increased amount of spawn from the fishing grounds at the other end of the lake, and the herring grounds on the Canadian side as well as from

our own fishing ground—and with this boat at its command, the facilities for planting the fry, or young fish, will be greatly augmented and the fishing laws can be much better enforced, including bringing fishermen who come into our waters from adjoining states within our control

"This spring over 60,000,000 of these young fish were placed in the lake from the Erie hatchery—40,000,000 of white fish and 20,000,000 of herring. These increased facilities will undoubtedly be followed by an increase of hatchery capacity, and all will operate to the end of increasing the profit to those engaged in the fishing industry at this port, in increasing the number of men who can profitably engage in the business here, and greatly increasing the money and business that will come to the city as a result thereof and be spent among its people.

"I regret exceedingly that sickness prevents the Commissioner of Fisheries from being with us to-day. He is deeply interested in developing the fishing industry at this port, and very enthusiastic and hopeful in regard to the benefits he expects to result thereto from the placing of this boat upon these waters at the disposition of the Department.

"I congratulate the Fish Commission, the Fish Commissioner and the Advisory Committee, selected by him, consisting of Messrs. John Hamberger, H. J. Knight, John French, Henry Hinrichs and Jeremiah A Driscoll, upon the result of their efforts—and I also heartily congratulate Paasch Bros. upon their skill as boat builders, evidenced in the construction of this boat, and upon the integrity and good faith with which they have carried out their contract. All concerned are to be congratulated upon the excellent results from the appropriation.

"To Governor Stuart was assigned the honor of naming this boat, and to me the honor of naming the young lady to christen it. Miss Minnie Maher has consented to perform the christening service, and from the fact that the boat is to be dedicated to the industry in which she and her people are interested, I predict that her heart is with the service.

"In selecting the name the Governor has exercised the good judgment that accompanies all he does—excepting the one instance at the last session of the last Legislature he vetoed the bill increasing the member's pay.

"Commodore Perry! The name not new to these waters and this shore. Ninety-five years ago, when war clouds hovered over the nation and the hostile fleet of a foreign enemy threatened the cities upon these shores and commanded the waters thereof, a young man, 28 years of age, then a lieutenant in the American navy, came to Erie from Newport, R. I. He immediately became actively interested in the building and fitting out of a war fleet which was then in the process of construction on the south shore of this bay, at Cascade Run, a couple of miles above this point, and where the Pittsburg docks now are, and at Lee's run, the terminus of the old canal, under the direction of Captain Daniel Dobbins, who has descendants still residing at Erie.

"Lieutenant Perry was made commander of the naval forces of the United States on these waters, although he had never been in a naval engagement. The fleet was built of green oak timber taken from the forest along the shore of the bay and lake. A tree standing in its natural state in the morning would often by night have become an integral part of a ship. The story of that fleet and what it did is old to most of you. It had cleared with nine vessels from the bay on August 5, 1813, and after crossing to and returning from Long Point, made for the upper part of the lake to meet the British fleet under Barclay, a veteran from the sea service of Europe, who had commanded under Nelson at Trafalgar. Barclay had six vessels, but guns with longer range and more of them and more men than Perry's fleet carried. On September 10, one of the great naval battles of history was on—and although the American commander had had little practical experience in naval warfare, and a large part of his men were new at that kind of fighting, there were men behind American guns that day who had fought to victory with Hull in 'Old Ironsides.'

"It is not my purpose to give an account of the battle, but only to catch a glimpse of the commander during its continuance.

"You will remember that for two hours Commodore Perry's flagship, the Lawrence, which led the Americans, bore the concentrated fire of the whole British fleet, she giving her undivided attention to the enemy's flagship, the Detroit—and that at the end of that time, all of the Lawrence's guns were dismounted, two-thirds of her crew killed or wounded, her masts down and her decks covered with the blood of the dead and wounded—the battle seemed lost to the Americans, although the Detroit was nearly as badly crippled as the Lawrence. Commodore Perry, seizing his flag and taking his 13 year old brother, ordered a row boat manned, and directed them to row him to the Niagara, a sister ship of the Lawrence. Passing within pistol shot of the enemy's ships, and amid a storm of flying bullets, he transferred his flag to the Niagara, filling with his coat a hole in the row boat made on the passage by a cannon shot. He forced the Niagara through the centre of the enemy's fleet, followed by a part of his own ships, delivering one broaside after another, doing such fearful damage that in fifteen minutes after he came about the Englishmen had surrendered. It was then that he sent to General Harrison his celebrated message, 'We have met the enemy and they are ours, two ships, two brigs, one schooner and one sloop.'

"The Niagara now lies at the bottom of the lower end of the bay, and within hailing distance of the channel through which ships pass as they enter and depart from our harbor. One can easily fancy that from her resting place she is noting the prodigious results of the great naval battle of which she was a part—the passing to and fro for hundreds of miles east and west of the immense commerce of modern days upon the great lakes, and that she is watching and waiting for the first news of a hostile flag upon the waters she helped to conquer when Phoenix like she will arise in the form of a modern fleet, and repeat the achievements of the past.

"And what more fitting and appropriate than that the name of this illustrious commander should be given to this boat, which, in the peaceful and enterprising times that have followed those achievements, and surrounded by the scenes of his activity, is to be devoted to his principle of achieving the best possible results from opportunities at hand."

Senator Sisson was followed by Mr. Liebel, the Mayor of the city, who said:

"The State of Pennsylvania and the city of Erie are uniting this afternoon in the recognition officially of an act that means much to

Erie and to Pennsylvania. Truth compels the statement that, for some reason or other, our people have in the past not been properly alive to the possibilities of lake activities, both as to transportation by boat and the fishing industry. With all the natural advantages that a liberal Providence could be expected to grant, a land locked and accessible harbor, with land adjoining suitable for the building of a mighty city, our people have not always risen to their opportunities; until we have seen less favored but more active and alert and strenuous neighbors along the water front, forge ahead in the commercial and industrial world. I honestly believe that we are in the presence of a better and more promising times. It has been the policy of the municipality for a number of years past to provide, as the funds allowed, for the improvement and enlargement of Lakeside Park along the bay. That this park has grown not discreditably a glance at this moment will demonstrate. At last evening's session of city councils further provision was made for a continuance of this commendable work during the current fiscal year. Coupled with the city's efforts we have the munificence of the Commonwealth, which at the late session of the State Assembly made bountiful provision for the extension of State street out into the bay. That this action of the State will be of far reaching consequence to Erie and to Erie's shipping is self evident. It means that boats of deeper draught and of greater capacity will feel encouraged to come to our port, and it now remains for the shippers of Erie to take into careful consideration the advisability of encouraging and endorsing the enterprise and progress shown by supporting and patronizing the lake transportation service which promises to come to our doors for a portion of our business.

"To-day we have a further example of the interest of the State in our welfare. This boat launched this afternoon will, as I understand it, do double service, by patrolling, and therefore protecting the fishing industry; and by use in the collection of spawn. I congratulate the members of the commission on the manner in which they have expended the moneys entrusted to their care. I am sure that time will vindicate their judgment.

"I cannot allow this opportunity to pass without saying just a word concerning another project that is dear to many of our citizens, and which at the proper time I think should be commended to the inquiring interest of the State. In keeping with the desire to further the lake and harbor interests here, the widening of State street, in harmony with the extension to be built and the hopes and aspirations of the people, is worthy of more than passing notice and attention. A portion of lower State street is State property, and to the State we must look for aid in the form of the necessary funds that will be required. Erie is the only lake port in Pennsylvania, it is a place of commercial importance as well as historic interest; it boasts a beautiful bay, it invites the people of surrounding sections to come here when the season is favorable to enjoy our balmy lake breezes, and to come to know of the hospitality of our people. It looks with hope to the future for a great increase of tonnage in shipping; it is confident that it will become a regular point of entry for the great lines of lake transportation; and I believe that at the proper time it should ask the State with good grace and with reasonable assurance of success, to assist. We should have this a sightly thoroughfare, with no unnecessary obstruction to traffic, that it may appeal to the eye and

have the approval of our business sense and judgment; and today, when such matters are uppermost in the mind, I point to it as a project of first importance

"Referring again, in conclusion, to the work of this afternoon, I once more express the hope that the Commodore Perry may be worthy of the men who brought her into being, that she may play well her part in the affairs of our bay and lake, and their natural industries, and that the future liberality of the Commonwealth of Pennsylvania may at a not far distant date call us here, as it called us today, to signalize an act of progress in the history of this community. May that time mark not only the completion of the extension of State street, but also its widening to a degree demanded by every consideration of appearance and business."

The Honorable Frank J. Detzel, member of the House of Representatives, followed and said:

"The preceding speakers have so thoroughly covered the grounds that I will have to content myself with very brief remarks. At the last session of the Legislature there was more than ordinary care exhibited in looking after the interests of the people of Erie. In addition to liberal appropriations to our public charitable institutions, it made posisble by a grant from the State Treasury an extension of State street into the bay, which extension promises to be of great value to the future shipping from this port. Shipping is not our only concern, however, on the lake front. The protection of the fishing industry is of paramount importance to many in this community. Its upbuilding means much to the entire city and the section. As the only lake port in the State, and as the representative of the great Commonwealth of Pennsylvania in lake traffic and fishing, it behooves Erie to overlook no opportunity to make the most of its natural resources and advantages.

"The State Department of Fisheries has not overlooked the necessity of safe guarding the means of livelihood of many of Erie citizens with respect to the fisheries, and we of the city should also be equally on the alert. I want to compliment the Commissioner of Fisheries and the gentlemen of the Board of Fishery Commission on the good judgment and taste displayed in the construction of this beautiful boat, the Commodore Perry, for which an appropriation was made at the last session of the Legislature. I sincerely hope that the staunch craft launched this afternoon will enable the Department to do even more yeomen service in the cause for which it was built and that it will ever be worthy of the noble name it bears, the Commodore Perry."

The boat having more than fulfilled its contract requirements was accepted and I appointed Mr. Jerry Driscoll, captain, with a crew consisting of an engineer and fireman Although only a few months in commission, through the use of the Commodore Perry such valuable work has been performed that it may be almost said to have paid for itself. Illegal fishing in the lake was entirely broken up and the licensed fishermen received a perfect protection which never before could be given them. Many million herring eggs were secured from Canada, ports which otherwise could not have been secured. The boat may be considered as indispensable. The cost of operating the boat could only be estimated. It was thought that about $3,000

would be sufficient, but this amount was short by several hundred dollars and it will not be possible to operate the craft in the spring and will therefore have to be put out of commission until June

OUR RELATIONS WITH THE NATIONAL GOVERNMENT.

The relations between the Department of Fisheries and the United States Bureau of Fisheries remains very close and cordial. The arrangement in operation for several years by which the National Government collected all the pike-perch and white fish eggs from Ohio waters and turned over a portion to Pennsylvania on the latter paying the pro rata cost remained in force, and a much larger percentage of eggs was gathered than in any previous year. Pennsylvania also received a generous supply of lake trout eggs from the Northville Station. The bulk of the fish hatched were planted by agreement in Lake Erie, a few thousand being deposited in suitable interior lakes. Pennsylvania also received a consignment of silver salmon eggs from the Nationa Government hatchery in the State of Washington for the experimental stocking of the Delaware river. Correspondence between this State and the National Government on fishery matters has been frequent, the State both giving and receiving information. The National Government also sent to the State a consignment of fresh water mussels which either bear pearls or produce shells suitable for pearl button making. The consignment was for experimental purposes in our hatchery in an endeavor to rear them for stocking purposes.

INTERNATIONAL FISHERY CONGRESS.

Through the efforts of the United States Bureau of Fisheries the International Fishery Congress, composed of people interested in fish culture and fishery matters in all parts of the world, was induced to hold its quadrennial session which occurred this year in Washington, D. C. in September.

Invitations were sent to the Governors of all the states to send delegates in proportion to the size and importance of their respective fishery interests. Pennsylvania was invited to send at least five delegates and the Governor appointed Mr. Marion G. Sellers, of Philadelphia; Mr. W. A. Leisenring, of Mauch Chunk; Mr. Henry J. Hinrichs, of Erie; Mr. J. P. Reynolds, of Meadville, and myself, as delegates.

The Congress opened on September 22d with Dr. H. C. Bumpus, of the American Museum of the Natural History of New York, as the presiding officer, and sessions were held daily until the 26th. The Pennsylvania delegation organized and honored me with the position of Chairman There were representatives present from nearly every nation in Europe, many of the Republics of South America and China and Japan. Every state in the Union engaged in fish cultural work,

no matter how small its scope, was represented by delegates. President Roosevelt made an address to the members of the Congress in which he declared that "Conservation of the fishery resources of the country is as important as the protection of the forests and that decided steps must be taken to preserve to posterity the fish supply."

It soon became apparent both from the character of the papers read and the utterances of foreign delegates that fish culture in this country is far in advance of that abroad, although it was in Europe that artificial propagation was first instituted. The foreign delegates were very free in their expressions of surprise at the great progress made by the National Government and states in fish cultural work.

Naturally the majority of the papers and the discussions were on the ocean fisheries, but two propositions of great importance to Pennsylvania were discussed by the Congress. One, the proposed Federal control of the Great Lakes and the boundary waters between the United States and the British possessions in North America with relation to the protection of the fisheries. In addition a paper presented by a delegate from Maryland advocated Federal control of waters forming the boundary line between states and both propositions met with little or no objection on the part of the delegates and resolutions in accordance therewith were adopted.

Another subject of great interest to Pennsylvania was a discussion on the proper open and close season for fresh water fishes especially of such non-nest building species as the white fish of the Great Lakes. In the International Congress the question was not brought to a vote, but every American fish culturist and every American delegate who spoke, save one, advocated an open season for market fresh water fishes during the spawning period and if desirable a close season during the summer months when immature fish are most abundant and when the fish are less desirable for food. It was a significant fact that practically the only delegates who advocated a close season for market food fishes during the spawning period were those from counties in which artificial fish culture is not carried on on a large scale Those who advocated an open season during the spawning period for this type of fishes held that the results from natural propagation are very small and not sufficient to maintain a market supply and that artificial propagation was necessary; that artificial propagation could only be carried on to the best advantage by encouraging the commercial fishermen to operate their nets and to have spawn takers on all the boats.

The Pennsylvania delegation pointed out that to fill the hatching houses in Pennsylvania with white fish and herring would require the operation of every boat working from the port of Erie and every boat not required by the spawntakers of the United States Government and the State of Ohio in Ohio waters, and every boat operating out of at least two of the Canadian ports, and that even then there would be no overcrowding.

Three papers were read on this subject by fish culturists of national reputation, each without the knowledge of the other and in each a full open season during the spawning period was advocated and a close season during the summer months.

The next meeting of the Congress is to be held in Rome, Italy, in 1911, and each state in due time will be requested to send delegates.

The value of the Congress was such that I hope when the time comes, this Commonwealth will favorably consider the invitation.

AMERICAN FISHERIES SOCIETY.

Two days prior to the meeting of the International Fishery Congress, the American Fisheries Society convened in annual meeting in Washington. As usual the meetings were of great value to those who attended and the states represented. Among the lessons of value argued by Pennsylvania was a new and economical device for hatching yellow perch, a work in which the Commonwealth was one of the pioneers. One of the features of hatching yellow perch eggs in jars set to a battery is that usually some one is required in constant attendance night and day until the hatching is concluded, but the new device renders this extra attention unnecessary.

The question of Federal control of boundary waters was discussed and a resolution was adopted with but two dissenting votes, advocating an open season during the spawning period for non-nest building fishes with the operation of fish hatcheries to their fullest capacity

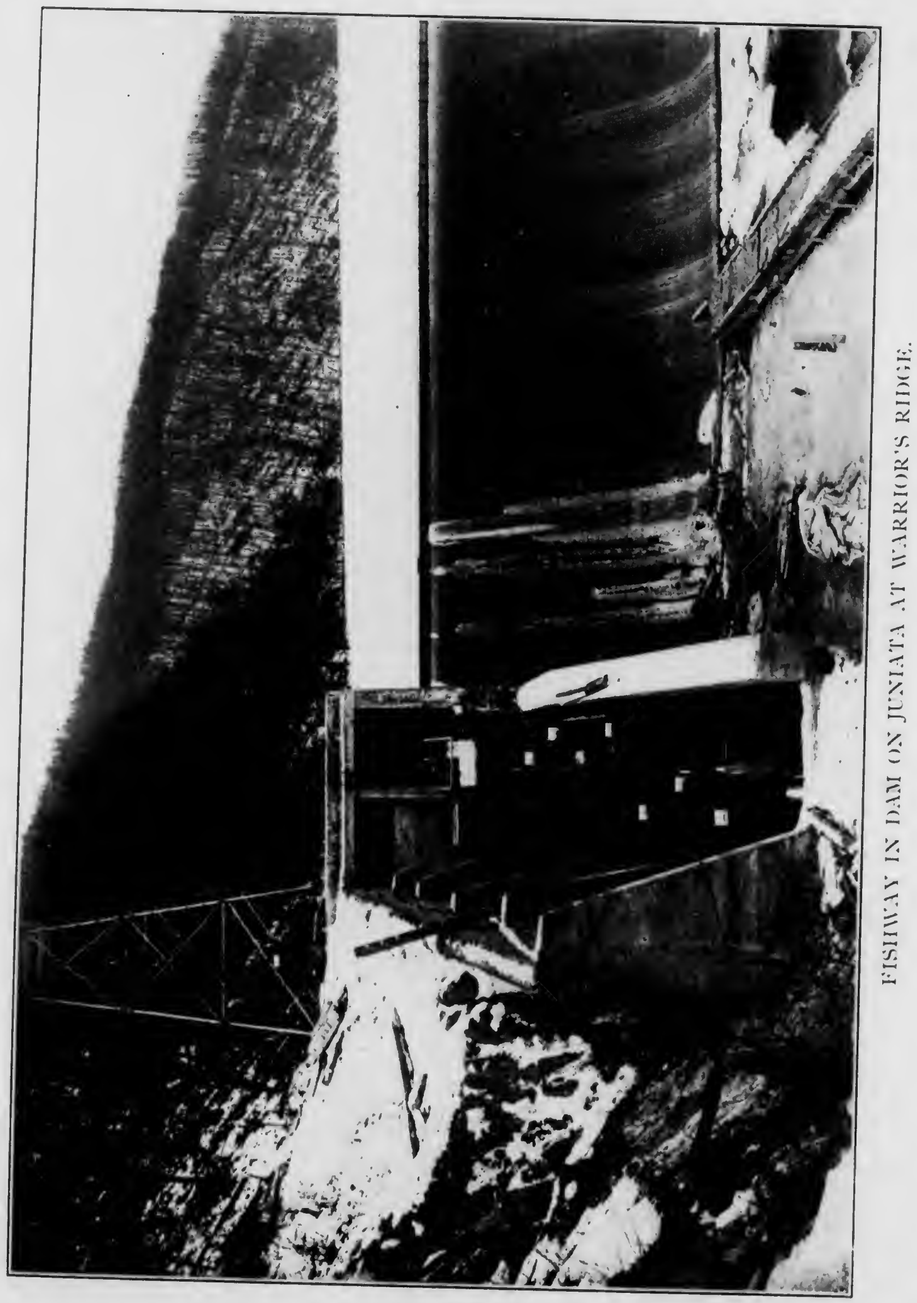
BLACK BASS SEASON.

The drought had the effect of spoiling the season for black bass in the majority of the streams, even the North Branch of the Susquehanna in Wyoming and Bradford counties, suffered and this is a section which usually yields good fishing when there was complaint from other sections. It was not until the autumn when the fish had gone into the pools that anything like good bass fishing was reported.

PIKE-PERCH OR SUSQUEHANNA SALMON.

The pike-perch catch in many parts of the Susquehanna river is claimed to have been unprecedented. Large catches were reported almost continuously from the first of September and the individual specimens were said to have been well worth catching.

Some blue pike were also taken from the Susquehanna near Sunbury. These fish retain all the peculiarities of the fish in Lake Erie from which body of water they were introduced about four years ago. It is gratifying to be able to say that one of the most able ichthyologists in the country has acknowledged the fish to be a distinct species from that of the pike-perch or the Susquehanna salmon, a contention which has long been supported by fishermen and this Department.



FISHWAY IN DAM ON JUNIATA AT WARRIOR'S RIDGE.

For years scientific men held that the blue pike in Lake Erie was only immature pike-perch and had never spawned. After the Department of Fisheries began taking eggs and propagating blue pike, it was still held that they were pike-perch; that while they had reached spawning age were yet young and possessed very peculiar color through their environments. The retention of their color in the Susquehanna river and the production in Lake Erie of fish with the same hue weighing from seven to ten pounds each caused the fish to be examined more closely with the result announced above.

While some ichthyologists agree that it is a distinct species they declare that they are unable to find structural differences between it and the pike-perch.

The greatest catches on the Susquehanna were reported in the vicinity of York Haven below the dam. This was generally believed to have been due to the low water in the river which prevented the fish from ascending freely the fishways in the dam on the York county side of the river. Good catches of pike-perch were also reported from the Upper Delaware river.

TROUT SEASON.

The trout season opened inauspiciously as usual with bad weather. As this has been the almost unbroken rule for the last seven or eight years many fishermen claim it would appear to be good policy that the season open at least a week or two later, say May first. On the other hand, such a law would seriously curtail the fishing in many low land or meadow streams.

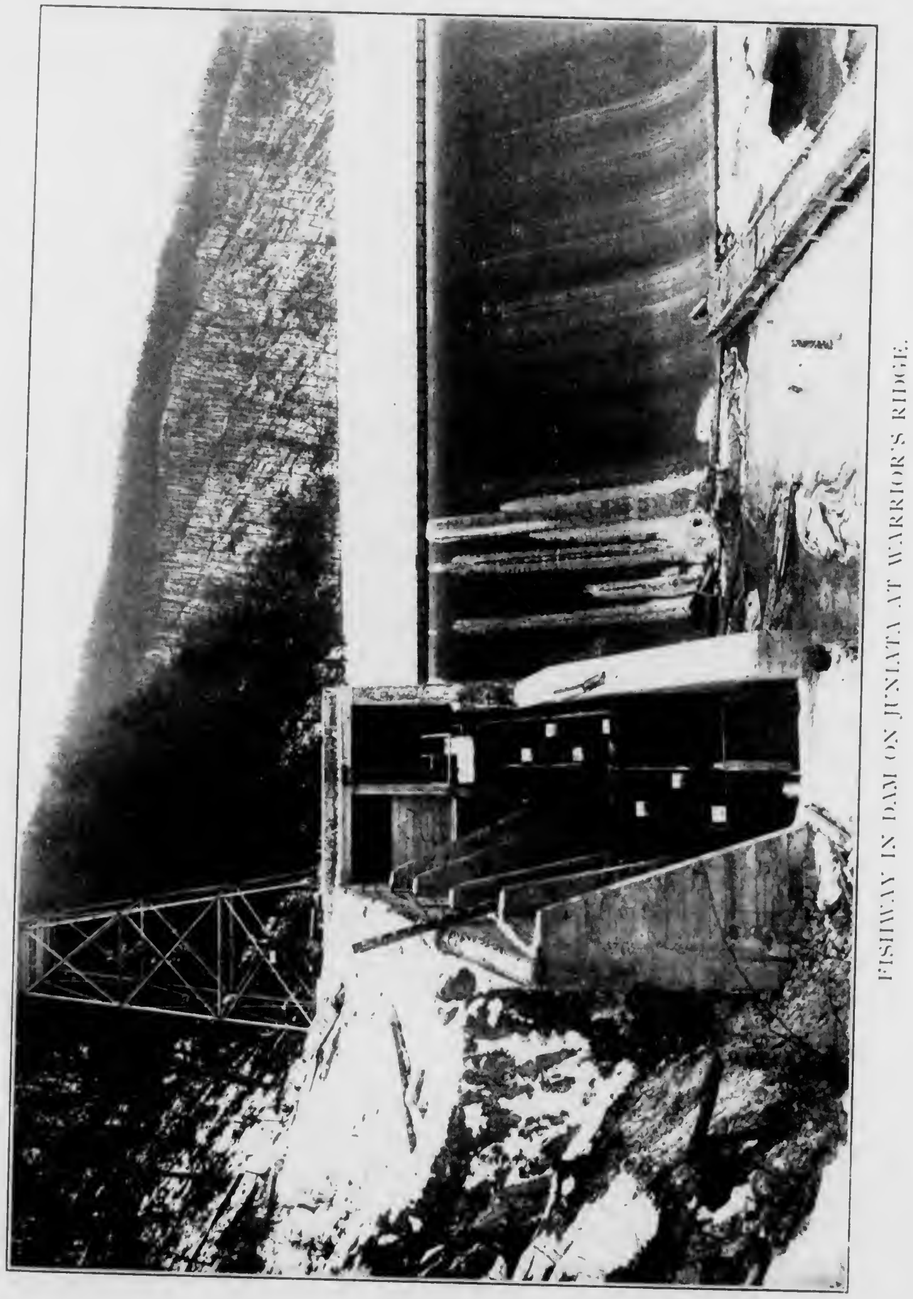
In many sections there were heavy snow falls; in others cold rain, and in few places was there sunshine. The streams were banked full and there was little or no sport in taking the fish from the water. Taking into consideration the opening day a very large number of fish were caught and of a size that argued well when the weather became warmer and the streams in better condition.

The hopes thus far held out were not disappointing. With very few exceptions the reports were unanimously to the effect that there were more trout and of better size than the previous year. The general average was said to be marketable as to size and the wardens reported numerous fishermen who were discarding six inch fish and keeping nothing less than seven inches in length.

Small fish were also said to be abundant showing that the increase was heavy and likely to be sustained under normal conditions. Unfortunately, normal conditions did not continue. A long drought which has already been referred to started and it looks as though the streams have received a set back from which they will not recover for some time.

FISHWAYS AND SCREENS.

Three fishways have been constructed and completed by the owners of dams during the year. Two started in the York Haven dam in 1907 were finished and one in the dam of the Juniata Water and



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For years scientific men held that the blue pike in Lake Erie was only immature pike-perch and had never spawned. After the Department of Fisheries began taking eggs and propagating blue pike, it was still held that they were pike-perch; that while they had reached spawning age were yet young and possessed very peculiar color through their environments. The retention of their color in the Susquehanna river and the production in Lake Erie of fish with the same hue weighing from seven to ten pounds each caused the fish to be examined more closely with the result announced above.

While some ichthyologists agree that it is a distinct species they declare that they are unable to find structural differences between it and the pike-perch.

The greatest catches on the Susquehanna were reported in the vicinity of York Haven below the dam. This was generally believed to have been due to the low water in the river which prevented the fish from ascending freely the fishways in the dam on the York county side of the river. Good catches of pike-perch were also reported from the Upper Delaware river.

TROUT SEASON.

The trout season opened inauspiciously as usual with bad weather. As this has been the almost unbroken rule for the last seven or eight years many fishermen claim it would appear to be good policy that the season open at least a week or two later, say May first. On the other hand, such a law would seriously curtail the fishing in many low land or meadow streams.

In many sections there were heavy snow falls; in others cold rain, and in few places was there sunshine. The streams were banked full and there was little or no sport in taking the fish from the water. Taking into consideration the opening day a very large number of fish were caught and of a size that argued well when the weather became warmer and the streams in better condition.

The hopes thus far held out were not disappointing. With very few exceptions the reports were unanimously to the effect that there were more trout and of better size than the previous year. The general average was said to be marketable as to size and the wardens reported numerous fishermen who were discarding six inch fish and keeping nothing less than seven inches in length.

Small fish were also said to be abundant showing that the increase was heavy and likely to be sustained under normal conditions. Unfortunately, normal conditions did not continue. A long drought which has already been referred to started and it looks as though the streams have received a set back from which they will not recover for some time.

FISHWAYS AND SCREENS.

Three fishways have been constructed and completed by the owners of dams during the year. Two started in the York Haven dam in 1907 were finished and one in the dam of the Juniata Water and

Water Power Company at Warrior's Ridge. Those in the York Haven dam between the York county shore and Duffy's Island are constructed of concrete and are substantial structures.

The fishway in the dam at Warrior's Ridge is a peculiar structure made necessary by the character of the dam. The pattern is the one which has been adopted by this Department, namely, the Cail pattern designed by an employe of the United States Bureau of Fisheries and which is in general use in the dams in this State. Owing to the height of the dam and the comparatively small size of the pool beneath, it was found impossible to construct a perfectly straight fishway such as is usually built. It was therefore designed in a series of slopes extending with a pitch of one foot in five backward and forward from the top to the bottom and it extends beyond the line of the crest less than 50 feet instead of 130 feet or more had it dipped from the top to the bottom without a break. It is believed, however, that it will be just as effective since the interior construction of the fishway follows faithfully the plans of the designer.

Orders for the construction of two additional fishways were issued by the Department during the year—one too late to be completed until spring and the other was granted an extension of time. Four fishways have been ordered to be constructed in the dam at McCall's Ferry, but as the dam is not yet completed and all work has temporarily been suspended on the structure, and as there are still openings in the dams through which fish can pass, the fishways have not been completed and the Department does not feel justified in proceeding until the openings have been closed or the dam completed, but assurances have been received from the company that the fishways will be finished simultaneously with the dam.

A number of applications were made for the erection of fishways in dams constructed prior to 1901, the cost of which of course would have to be borne by the State under the act of 1901. All the dams were investigated for which applications were made, but with two exceptions the character of the streams did not, in my opinion, render it necessary that fishways be constructed. In one case I felt that a fishway should be built and was about to take the final steps when I learned that a company was about to be organized with the idea of dismantling the dam and building another to make a retaining basin to furnish electrical light and power. Under the circumstances I took no further action.

The second case was in the north branch of the Susquehanna above the town of that name, but it was too late in the year to construct the device and it will not be built until spring.

After a long period and many interviews the difficult problem of placing screens in front of the turbine wheels of the York Haven power plant has apparently been solved and on October 29, screens were placed of a temporary, but it is believed effective character and a screen of a permanent nature is to be installed in the spring.

Screens were also placed in front of the turbine wheels of the Juniata Power Company at Warrior's Ridge, and one ordered in a raceway in Montgomery county where on one occasion this Autumn so many eels had gotten into the turbine wheel as to stop the operation of the plant.

FISH PROTECTIVE ASSOCIATIONS.

As time passes and they become more thoroughly organized the value of the organized fish protective associations becomes more apparent and their work more effective. They are becoming in fact one of the main supports of the Department of Fisheries both in promoting the work of protection and the securing of the best results in stocking waters.

By fish protective associations it is not meant organizations which take up tracts of land and fishing waters and exclude the general public, but bodies of men who band themselves together in various counties to protect and increase fish life and to educate others to do likewise. Organizations which do not stand for closing streams to the public, but on the contrary advocate and fight for the maintaining of our waters as they ought to be for public uses.

When a little more than a year ago a sportsman angler learning that certain property owners had put up trespass notices along the Lackawaxen river in Wayne county under the trespass act of 1905, and attemped to close to anglers a stream which had been declared public by legislative enactment and which had been fished without let or hindrance for more than 100 years, acting on behalf of his brethern of the rod, entered the stream from a State bridge and fished until he was arrested. The name of this public spirited man was H. L. Foster, of Scranton. He was convicted by a Justice of the Peace and appealed to the county court which tribunal sustained the finding of the magistrate on the ground that as the Lackawaxen was not navigable, the Legislature could not make it a public stream without compensating the owners of the property. When the news of this was spread abroad the various organized fish protective associations throughout the State, immediately came forward subscribed money and carried the case to the Superior Court.

The foregoing is a sample of the work which fish protective associations are doing towards assisting the Department in maintaining open waters for fishing purposes. Many of the associations pledged themselves to report not as informers but as public spirited citizens in cases of violation of the laws which come under their observation. Other members have gone so far as to have themselves enrolled as special fish wardens, and as far as I have been able to learn, not one of these men have ever taken a dollar of the half of the fine which the act of 1901 allows, but turned such moneys into the treasury of the association for fish protective work. Nine-tenths of the associations take a keen and intelligent interest in stocking streams and in the aggregate spend hundreds of dollars in planting fish to say nothing of the time which they freely and unselfishly give to the work.

At least one fish protective association should be organized in every county in the State. The counties which contain them soon show the moral effect of the association in a lessened number of fish law violations and an increase in the fish supply.

The importance of organizing is being recognized and at least a dozen new bodies of this character have become associations during the year. I believe it is not too much to say that more than 6,000

people to-day are members of fish protective associations, and if the movement continues to grow as it has, it will not be long before this number is doubled.

There is, however, one thing remaining, to make the various fish protective associations an irresistable power for good in the State, that is to either to combine in a State organization or to hold an annual convention. It seems to me it would be better if they did both. There are three bodies which to-day offer chances for enrollment in State organizations, namely, the Pennsylvania Fish Protective Association, the State Sportsmen's Assocation and the United Sportsmen of Pennsylvania.

The results of the convention to draft a bill for the better protection of fish which was held in Harrisburg on October 29 and 30, confirms me in the idea which I have long held, that there should be a State organization or annual gathering or both.

Among the organizations which have been very prominent during the past year have been the Pennsylvania Fish Protective Association, the Lancaster County Fish and Game Protective Association, the Chester County Fish Protective Association, the Berks County Fish and Game Association, the Lebanon County Fish and Game Protective Association and the Conawacta Rod and Gun Club.

The State Sportsmen's Association, which has hitherto confined itself principally to gunning and game, has also recently shown a disposition to take an active, earnest and commendable interest in the proper protection of fish and to discountenance efforts to legalize more or less destructive methods of fishing by selfish interests under the guise that such methods are desired by sportsmen.

McCALL'S FERRY DAM.

The McCall's Ferry Dam has been the cause of bitter complaining on the part of residents of the Susquehanna Valley above and below the structure. When the project for this huge dam was announced this Department undertook to ascertain by what authority at law it was to be placed across the Susquehanna. Through its efforts the Attorney General procured a temporary injunction and had the matter taken into the Dauphin county court. That tribunal after hearing argument decided to permit the building of the dam with the proviso that fishways were to be constructed in accordance with plans furnished by the Department of Fisheries, and that provisions should be made for the navigation of the river when it should be required for that purpose. I ordered the construction of four fishways of the Cail pattern to be built on the Lancaster county side where the greatest and continuous water flow was to be. Plans were submitted by the Company and approved by me as Commissioner. Before the completion of the dam the Company ceased work on account, I understand, of temporary financial embarrassment due to the suspension of a trust company in which the funds of the corporation were deposited. Subsequently work was resumed for a short time and again suspended. Pending the completion of the dam and the suspension of the work I have no authority to compel the construction of the fishways nor can I give out a contract under the Act of 1901, for building the fishways and collecting the cost thereof from the corporation. Before I can take this action the dam must be completed.

While all signs point toward a more general utilization of the water power of this State by the construction of dams it seems to me that there should be a Legislative inquiry into the subject and some course adopted under which the Department can act more freely and effectively to insure the migration of fish. Fishways on very high dams like that of McCalls Ferry are of doubtful utility for the passage of such timid fish like the shad and the public cannot afford to have this valuable food fish exterminated.

WATER POLLUTION.

Gratifying progress was made by the Department in improving the water conditions of the State without having been compelled to bring to completion any suit under section 26 of the Act of May 29, 1901. By the exercise of tact and argument the owners of a number of tanneries and other industrial establishments agreed to take measures which would prevent the dangerous waste of their establishments from entering the streams and killing the fish. One concern has purchased many acres of land for subsiding reservoir purposes. The only considerations which the owners asked was a little time to make the necessary provision for the utilization of the deleterious waste, such consideration was invariably granted. A large number of sawmills at once stopped emptying sawdust into streams on the request of the Department. There has also been a noticeable increase of public sentiment against the pollution of waters to an extent which will destroy fish and also a noticeable and healthy growth of sentiment among manufacturers that fish life as an important article of food should be conserved and that to conserve it every practicable means should be taken to prevent pollution.

THE FISH LAWS.

The existing fish laws are in a very unsatisfactory state and cause great dissatisfaction throughout the Commonwealth. Two or three are apparently unconstitutional or unenforceable and other provisions are obscure and apparently open to more than one interpretation. The Act of May 29, 1901, or the principal act relating to fish and fish protection, was the result of the best thought of the time and passed on conditions which existed at that time. It was also a codification of the new laws on the Statute Books which dated back prior to the framing of the new constitution. For its day it was liberal and much clearer than preceding acts. Its title moreover has stood repeated tests of the Superior Court and the County Courts and in very few instances only did the County Courts hold any provisions in the act to be non-enforceable or incapable of reasonable interpretation, but

conditions have radically changed since the Act of May 29, 1901 was put upon the Statute Books. Fish have increased in most of the waters and the public generally taking a greater interest in fishery matters. Obscurities which have for a long time escaped notice became very apparent and some of the provisions became onorous in view of the increased fish supply. These conditions together with defective acts subsequently placed upon the Statute Books render a new act very important.

INTERNATIONAL CONTROL OF BOUNDARY WATERS.

For years the fishery authorities of the different states and Canada bordering on the Great Lakes have been endeavoring without avail to secure uniform fishery laws. Different interests have invariably successfully interfered. Four years ago there was a meeting of Commissioners of different states and of Canada at Detroit with the result that certain uniform regulations were proposed. Pennsylvania in 1905 adopted those regulations almost in toto by an act of the Legislature, and one feature enacted was one regulating the size of fish which might legally be caught in Lake Erie within the jurisdiction of Pennsylvania.

The following year Ohio adopted an act which was nearly but not quite uniform, there being several days difference between the open and close season and in the size of the meshes of nets, also license fees. New York failed to enact any measure whatever looking toward uniform regulations and Canada did not change her regulations on the ground, unofficially stated, that it would not do so until the states bordering on Lake Erie adopted uniform laws. The consequence was that Pennsylvania fishermen suffered and in 1907 an act conforming to the regulations recommended by the Detroit conference were repealed, the successful effort to do so meeting with my full approval

New York subsequently revised its fishery laws on Lake Erie, but they differed somewhat from Pennsylvania and Ohio. In consequence of the variations, not only on Lake Erie, but on all the boundary waters between the United States and the British possessions in North America, the National Government and Great Britain felt that some action should be taken, and the result was that on April 11, 1908, a treaty was signed between the two Governments by which it was agreed that the control of the fisheries in such boundary waters should be undertaken by the two Governments. In order to carry out the treaty the United States and Canada each appointed a Commissioner forming a temporary body known as the International Fishery Commission.

Professor David Starr Jordan, President of the Stanford University, California, was appointed by the authorities at Washington to represent the United States Government, and Mr. S. Bastedo by the Canadian authorities to represent Great Britain. Pennsylvania is interested in this movement to the extent that 45 miles of shore line on Lake Erie and to the Canadian line in the middle of the lake, an average distance of about 25 miles or altogether of over 1,100 square miles of water.

As Pennsylvania's fishery interests in this area is second in value among the states bordering on Lake Erie and Canada the proposition of the National Government is of considerable importance. The value of the Lake Erie fisheries to Pennsylvania is over $300,000 a year to the fishermen and an income to the State from licenses of about $2,000 annually. The value of the fish to the State is in the neighborhood of one milion dollars a year.

Uniform legislation is, however, to my mind, of paramount importance for the maintenance of fish and for the well being of the fishermen. I assume that the National Government would not take this proposed step without feeling sure that it had a perfect right to do so and I believe the outcome will be beneficial. The Commissioners have made a very careful investigation of all the conditions connected with the fisheries in the boundary waters and have been careful to interview the fishermen and to consult with the Commissioners of the various states surrounding.

I was called to meet the Commissioners on three different occasions. During the summer I met them in the city of Erie and journeyed with them to Ashtabula, Ohio, on the Canadian cutter, the Vigilant, when all the phases of the fishing interests with which Pennsylvania was concerned was gone into carefully. Later a rough draft of a bill was submitted to me with request for criticisms and a meeting to discuss them was held with the United States Commissioner in New York state on November 16. A few days later I received an invitation issued by the Secretary of State to meet with the United States Commissioner and the Commissioners of other states bordering on the Great Lakes in the offices of the Secretary of State at Washington, D. C., on Monday, November 23.

A delegation of fishermen of Ohio and Pennsylvania were given a hearing by the United States Commissioner and the State Commissioners and after their retirement the rough bill and the suggestions of the fishermen were considered and a new draft of a bill prepared. I am pleased to say that so far as the proposed measures for Lake Erie are concerned, the majority of them are founded upon present laws of Pennsylvania and the State of Ohio. Some are nearly word for word.

There are, however, two or three provisions which I believe are not only necessary but which would seriously curtail the fish food supply for the people and unduly injure the livelihood of the fishermen. Those interested in fishing on Lake Erie protested strongly both to me and the International Commissioners against these provisions. Feeling the protests were founded on justice and reason, I brought the matter before the Board of Fishery Commission with the result that the following resolution was unanimously adopted and sent to the International Commissioners.

Whereas, by the provisions of a treaty signed April, 1908, by the Secretary of State of the United States and the Prime Minister of England, the two nations propose to take over under joint control the fishery legislation of the boundary waters between the United States and the British possessions in North America. And,

Whereas, Commissioners of two countries are now preparing the bill governing the fisheries aforesaid to be presented to Congress and the Canadian Parliament to carry the treaty in effect. And,

Whereas, While the Board of Fishery Commission of Pennsylvania approves the principle of Federal control of the boundary waters to

the line of the British Possessions, it feels that the new law should permit the greatest possible catching of fish commensurate with the proper maintenance of the supply of fish especially in the Great Lakes. And holding this principle it is

Resolved, That in view of the great abundance of lake herring, blue pike, pike-perch and the rapid increase of the white fish there is no need for a close season particularly during the spawning period for these fish; that if a close season is considered essential it should be during the summer months when immature fish are most abundant and more apt to be caught; that a close season is unnecessary because of the abundant facilities of the National and State Governments to hatch these fish; that a close season especially during the late fall, early winter and early spring months, would unjustly deprive the people of a valuable fresh food product that is in the greatest abundance in Lake Erie. It is further

Resolved, That the International Fishery Commission is strongly urged not to declare any close season for net fishing as inimical to the public interests, but to provide for the broadest opportunities for gathering and hatching of the fishes named by the National, Provincial and State Government; also that no restrictions be placed on the operation of any fishing boat during the spawning period, if the owners or operators thereof offer no objections to taking on board spawntakers or who agree themselves to take properly, fertilize and turn into the hatcheries, if a regular spawntaker belonging to a National, Provincial or State hatchery cannot be placed on board.

The Commissioners acknowledged the receipt and stated that the definite settlement of the whole question of the International law had been postponed until next June.

UNIFORM LEGISLATION FOR THE DELAWARE RIVER.

As the Delaware river forms the boundary line between Pennsylvania and Delaware on one side and New Jersey and New York on the ther it is highly important that the laws relating to fishing on that stream be uniform. This was recognized more than a century ago by New Jersey and Pennsylvania entering into a compact in effect that all laws relating to the Delaware river between low water should be uniform. It is said that such a compact exists between Pennsylvania and New York but I have been unable to find any record, but the laws between Pennsylvania and New York have been for many years at least similar. In other words prohibitions against the use of certain devices and permission to use certain devices in fishing have been the same and by virtue of the compact between Pennsylvania and New Jersey the fishing laws on the Delaware river below New York state line were, with one or two minor exceptions, identical, even in phraseology until 1889. The two States enacted a measure relating to fish which was identical excepting in one or two particulars, and these nearly uniform laws were maintained until about five years ago when the New Jersey Legislature forgetting the compact passed a number of laws referring to the Delaware river without referring them to Pennsylvania for concurrence, and Pennsylvania likewise

passed one or two acts without referring to New Jersey. As a consequence great confusion and much trouble has resulted. This confusion was noticed and in 1905 Pennsylvania and New Jersey formed a joint commission to endeavor to frame a bill governing the fisheries of the Delaware river which would be uniform. It performed its work and the Pennsylvania Legislature adopted it, but the then Governor Pennypacker vetoed the measure on several grounds among which was that the title was unconstitutional. The bill in the New Jersey Legislature was then allowed to fall. For two years more the trouble continued and in 1907 the Legislatures of New Jersey and Pennsylvania again created commissions with the endeavor to bring about uniformity. On behalf of Pennsylvania there was appointed Senators Frederick A. Godcharles, Webster Grim, Algernon B. Roberts and President Pro Tempore, Senator A. E. Sisson, Representatives Hiram J. Sedwick, Alfred Marvin and Joseph N. Hunter and Commissioner of Fisheries W. E. Meehan and Frank B. McClain, Speaker of the House of Representatives, under the provisions of the joint resolution creating the commission, and Hon. Henry F. Walton, Ex-Speaker of the House of Representatives by Governor Stewart. By the terms of the joint resolution of the Legislature of New Jersey there was appointed from the Senate, Edmund W. Wakelee and Joseph S. Frelinghuysen. From the Assembly, Austin Colgate, Oliver Holcombe and Henry D. Thompson. By Governor Fort, Dr. Henry Van Dyke, and by terms of the resolution, Fish and Game Commissioner, B. C. Kuser, President of the Senate, Thomas J. Hillery and Frank B. Jess, Speaker of the House of Assembly. The request for the appointment of a similar commission by the Legislature of the state of New York arrived too late for action, but in order that the state might be represented, Forestry, Fish and Game Commissioner J. S. Whipple appointed J. H. Burnham and Dr. Tarleton H. Bean as an unofficial commission. The three bodies had several meetings. In order that they might have a true understanding of the whole subject and to act the more intelligently and for the best interests of the fish and the fishery industry of the Delaware river representative fishermen were invited to appear before the body to express their views. The result was that three bills were drawn; one governing the fisheries of the Delaware river from Marcus Hook to Trenton Falls; a second from Trenton Falls to the New York state line between the states of New Jersey and Pennsylvania; and a third for the Delaware river above the northern boundary line of New Jersey between the states of Pennsylvania and New York. These bills together with the report of the commissions are to be introduced at the forthcoming sessions of the Legislatures of Pennsylvania, New Jersey and New York. If they are enacted there will be for the first time in many years perfect uniform laws governing the fisheries of the Delaware river from Marcus Hook to the head waters.

The commisions had a difficult task before them but it seems to me that the work was well done and with one or two trifling exceptions meets with the concurrence of the leading fishermen of the river, differences which I hope will be adjusted satisfactorily.

FISHERY LEGISLATION BETWEEN PENNSYLVANIA AND MARYLAND.

There were many complaints both on the part of citizens of Pennsylvania and Maryland regarding the fishery laws of the Cheasapeake Bay and Lower Susquehanna river and imperfections in the Pennsylvania laws which permitted the Maryland fishermen to ship certain fish into Pennsylvania and sell them when such fish could not be sold in Maryland to the injury of the fishery interests of the latter state. Maryland authorities complained for example that Pennsylvania laws allowed black bass caught in Maryland to be sold in Pennsylvania during the close season and that under-sized yellow perch caught in Maryland could be sold in Pennsylvania at any time of the year with impunity. On the other hand Pennsylvania complained that certain types of nets allowed in the Chesapeake and that part of the Susquehanna within the jurisdiction of Maryland was leading to the destruction of certain fishes. Under the terms of the joint resolution creating the Legislative Commission to meet New Jersey the said commission was authorized to meet with a similar commission from Maryland to adjust the differences if possible. Maryland appointed Senator W. B. Baker and Speaker of the House of Delegates Caville D. Benson, Ex-Delegates Harry E. Goodwin and W. Lee Carey, Fish Commisioner, Charles F. Brooke and State Game Warden, Oregon Milton Dennis with Walter R. Townsend as its secretary. Several meetings were held between the two bodies and finally provisional legislation was agreed upon, but I regret to say that it was not acted upon by Maryland. Several provisions however of the provisional agreement have been inserted in a general fishery bill which will be presented as a Department of Fisheries measure at the forthcoming session of the Legislature. The Legislature of Maryland will probably be asked at its next session to enact the same.

PROPOSED REVISION OF THE FISHERY LAWS FOR INTERIOR WATERS.

Prior to 1901 the fishery laws of the State were embraced in more than a dozen acts scarcely any of which were perfectly drawn or completely enforceable. They pleased no class. The result was that several Fish Protective Associations and the Fish Commission got together, drafted a bill and the Legislature enacted what is known as the fishery act of May 29, 1901. Pamphlet Laws, 301. The new act was far in advance of anything ever put upon the Statute Books and was regarded in several other states as a model. As time passed, however, many deficiencies were apparent and some inconsistencies and many of the sections were not clearly expressed and were open to different interpretations. It is not surprising therefore that it came to be a common saying that a fisherman required a lawyer to go with him when he went fishing to advise him whether or not he was violating the law. Nevertheless there is no doubt when it was understood the law was of great benefit and of material assistance in the protection of fish.

In addition to the act of 1901 several other acts relating to fish found their way upon the Statute Books, one or two of which, well intentioned though they were, proved to be very harmful to the fishery interests, among them may be principally mentioned the act permitting gigging or spearing for eels, carp, suckers and mullets, and an act permitting seining for carp on giving a bond approved by a court of Quarter Sessions to catch carp and suckers only. These various unfortunate acts and the vagueness and inconsistencies in the act of 1901 renders it important that there be a new act as speedily as possible covering the whole question of fisheries in the interior waters. I feel also that one of the principal features of a new act should be sections so plainly worded that anyone can understand them

The chief difficulty in drawing a fishery bill is to so frame it that it would apply properly to all sections of the State. The area of the Comomnwealth is so great that naturally there are some differences in the character of the seasons and what might be a proper open season for a certain species of fish in one part might not be quite right for another. In order to try and strike the right average, and in order that there might be a free expression among all classes of fishermen I decided to call together in convention the various Fish Protective Associations and Fishing Clubs in the State. In this I was heartily assisted by the Pennsylvania Fish Protective Association, the headquarters of which is in Philadelphia, and the Lancaster County Fish and Game Protective Association of Lancaster. The convention was called together on October 29th and 30th at the Board of Trade Rooms in Harrisburg.

Previous to the convention I had sent letters to the various organizations asking for suggestions and on receiving them called upon several large Fish Protective Associations to send representatives to the Department office to assist in preparing a rough draft of a bill, framed on the suggestions and my experiences with the act of 1901. Among the Associations thus called upon were the Philadelphia Fish Protective Association, the Lebanon County Fish Protective Association, the Chester County Fish Protective Association, the Berks County Fish and Game Protective Association, the Lancaster County Fish and Game Protective Association, the Pohoqueline Association, and two or three gentlemen experienced in fish protective matters.

A rough draft was made of a bill containing thirty-seven sections, thus reducing the sections of existing acts from one hundred and fourteen

The convention was represented by about half the Fish Protective Organizations of the State and more than half of the remainder sent their expressions of sympathy and adhesion to the purposes of the convention. Four sessions were held covering two days and every section of the bill was exhaustively discussed. Just before the convention adjourned it directed that the bill drawn be submitted to the Commissioner, the chairman of the convention and a lawyer for final revision and to be put into strictly legal shape. When this was done a large number of copies were printed and sent all over the State for criticism and suggestions. Nearly every Association in the State gave

its approval of the new bill and not more than half dozen minor suggestions were made, and there were strong criticisms from several sections of only two clauses, viz., that forbiding fishing for game fish at night and those forbidding trespass with intent to fish on commercial and non profit yielding hatcheries. It was held that under conditions which existed in the act of 1901 a provision against night fishing would have been very important, but that as the new bill limited the number of game fish to be caught daily, and in the case of black bass the size limit raised and the number of rods limited, there was no necessity of this clause to be in the new act. It was also pointed out that a prohibition against night fishing would deprive thousands of men who have to work throughout the day, of an enjoyable recreation. With respect to the trespass clause it was held that it was improper to put in the Department the task of protecing these properties from trespass.

The whole fabric of the new bill which will be introduced into the Legislature of 1909 rests on the first two sections. The first section divides all the fish in the waters of Pennsylvania into three classes. Certain fish are named as game fish; certain fish are named as bait fish, and all others are designated as food fish. The second section specifically names the devices which may lawfully be used for catching game fish, bait fish and food fish and declares every other device, means or method of taking fish unlawfully. Two-thirds of the remainder of the bill is simply explanitory and an expansion of these two sections, and the remainder deals with the powers and duties of the Department. The phrasing was especially clear that in the two days of the convention a query as to the meaning of any part was only raised once. One very significant feature about the bill was the fact that the delegates were with two or three exceptions anglers exclusively. The lines were drawn a little more closely about game fishing while a greater latitude than ever was given to market fishing. For example the bass season was shortened, the size limit of the fish increased and the per diem catch limited to twelve. The daily catch of all game fish was limited and the number of rods and lines cut to four. On the other hand the open season for the use of fyke nets and dip nets for catfish, eels, etc., was advanced from six to nine months. The size limit of dip-nets was done away with entirely and a fish basket section more just to the operators designed, and commercial hatcheries were given encouragement.

If the bill is fortunate enough to meet the approval of the Legislature and the Governor a new act will go upon the Statue Books that I believe will be fairer and better for the protection of fish than exists in any other state in this country.

A bill was drawn to protect frogs and terrapin and place these two under the control of the Department. The present law protecing frogs and terrapin was so loosely drawn as to be unenforceable. The growth of the frog and terrapin industry in the State and the rapid decrease of both renders the protection of them highly important.

REPORTS OF HATCHERY STATIONS.

CORRY HATCHERY, STATION NO. 1.

Report of William Buller, Superintendent.

Hon. W. E. Meehan, Commissioner of Fisheries:—

Sir. In my last report I stated there were about 4,000,000 brook trout fry and eggs in the hatchery troughs. These eggs were all hatched the latter part of January. The first fish hatched began feeding in the beginning of February. Began to ship fingerlings number ones the first week in March. The total distribution was 3,571,000. Retained 75,000 for stock fish. The eggs and fry did well, the loss being very small.

In April placed 20,000 fry in one of the ponds to the left of the grounds at entrance. In a short time it was noticed the number of fry was getting less which could not be accounted for as there were not any dead fish to be seen and the screen at the outlet was perfectly secure. Special pains were taken to watch the pond closely when finally there were discovered several yearling brook trout which had evidently been hid in the tile that carries the water from the spring to this pond. Found in all twenty of these fish. The number of fry in the pond by this time was quite small. Aside from this unfortunate occurrence the remainder of fingerlings retained for stock fish are doing nicely.

Took 52,000 eggs from the European brown trout which I have in my show pond. I was directed to ship the fish hatched from these eggs to Blair and Elk counties to be placed in streams not suitable for brook trout. There were 1,075 male brook trout four years old and over shipped to Armstrong, Crawford, Erie, Monroe and Warren counties. Our experience has taught us that after a male brook trout becomes four years old it is worth very little as a breeder and should be gotten rid of.

Three years ago I was successful in securing a cross between a European brown trout and a brook trout. The male was the brook trout. At the present time I have several hundred nice healthy fish, but as yet I have not been able to find ripe males or females among them. As the rainbow trout spawn later in the season, at this station, than the brook trout I placed the hybrids with the rainbow trout thinking perhaps they may spawn at the same time. In this way I will be able to watch them more closely.

I fully realize that the water at this station is not well adapted for the hatching of sunfish and calico bass, owing to the temperature of the water, but anticipated a larger output of fish. Am sorry to say that I was not able to distribute more than 7,000 sunfish, and 2,000 calico bass. There were a number of muskrats in the banks of this pond at the time the fish were spawning and feel this accounts for some of the loss, as the rats keep the water in a muddy condition. I hope to overcome this cause of loss by placing concrete walls around the pond.

As I only have a few adult yellow perch I left the spawn remain in the pond to hatch. When I drew the pond down in October, removed six hundred fingerlings which were planted in Columbus Lake.

The catfish is another species which requires a higher temperature of water in order to have good success in hatching. I was able to distribute 9,100 fingerlings. The condition and health of the fish during the summer was exceptionally good considering the many times it was necessary to remove them from one pond to another. At times the ponds were overcrowded on account of repairing and rebuilding the ponds.

The brook trout began to spawn October 2. The first taking began to hatch November 20. The number of eggs and fry in the house at the present time is 4,000,000.

I made many improvements at the hatchery this year, among the most important being rebuilding old ponds. We concreted the sides and end of ten ponds, ranging in size from twenty to one hundred and twenty feet in length, by fifteen to twenty feet in width, and four to six feet deep. These walls were all capped with hollow tile. Graveled the bottoms of these ponds, put in ten new gates and widened the races at several of the ponds. There are as yet eight ponds to be concreted which I hope to finish next year. Graded around the ponds, graveled the walks, built a gravel drive-way to the new dwelling, sowed grass seed and sodded around the ponds that were rebuilt; laid 180 feet of eight inch tile to carry the supply of water from number one hatching house to one of the ponds, laid 180 feet of six inch tile to the ditch to drain the water from the floor. This water is not pure enough to flow through the ponds. Laid 40 feet of four inch tile from a spring to number two hatching house, built an ice house, fourteen by sixteen, fourteen feet high. Finished building the fence around the new grounds, put a new roof on the porch of number two hatching house, repaired tops of the walls on eight of the ponds that had been concreted late last fall. These walls were damaged by the frost last winter, whitewashed the fences, also the trees around the ponds, papered four rooms, rebuilt the picket fence, repaired roof on main building and put a new paper roof on shed of old dwelling house, tarred the roofs of the three hatching houses, ice house and office, painted the barn and ice house. This work has all been done by the three men who are employed at this hatchery and myself.

I have been stationed here for twenty-four years and during this time have noticed that the spring at the old dwelling house, which supplies several ponds on the grounds, becomes lower in the month of November. The variation in the flow has been almost the same each year, but this year the spring has been lower than at any time, in fact it was alarmingly low. It was necessary therefore to transfer the greater number of fish from these ponds to other ponds lower down, which are supplied by other springs. The springs which supply the three hatching houses are also lower than at any other time.

I am pleased to say however that there has been no serious trouble from shortage of water.

Estimated Number of Fish in Ponds at Hatchery for Breeding.

Brook Trout, four years old and over,	14,000
Brook Trout, three years and over,	8,500
Brook Trout, two years and over,	9,500
Brook Trout, one year and over,	50,000
Lake Trout, four years and over,	600
Lake Trout, two years and over,	1,000
Rainbow Trout, three years and over,	2,000
Rainbow Trout, two years and over,	2,000
Sunfish, blue gill and long ears,	400
Catfish,	200
Bullheads,	50
Total,	88,250
Brook trout eggs and fry in house at present,	4,000,000

Hope this report will be satisfactory.

Respectfully submitted,

WILLIAM BULLER,
Superintendent.

CORRY HATCHERY, STATION NO. 1.

Fish, etc., distributed from December 1, 1907, to November 30, 1908.

BROOK TROUT, FINGERLINGS NO. 1.

Armstrong county,	16,000
Butler county,	14,000
Beaver county,	3,000
Crawford county,	90,000
Clinton county,	447,000
Columbia county,	10,000
Cameron county,,	188,000
Clearfield county,	535,000
Clarion county,	6,000
Cambria county,	102,000
Erie county,	281,000
Elk county,	272,000
Forest county,	82,000
Indiana county,	35,000
Jefferson county,	146,000
Lawrence county,	10,000
Lycoming county,	342,000
McKean county,	246,000
Mercer county,	7,000
Potter county,	134,000
Tioga county,	320,000
Venango county,	72,000
Warren county,	213,000
Total,	3,571,000

Adult Male Brook Trout.

Armstrong county,	75
Crawford county,	50
Erie county,	250
Monroe county,	500
Warren county,	200
Total,	1,075

European Brown Trout, Fingerlings No. 1.

Blair county,	20,000
Elk county,	30,000
Total,	50,000

Catfish, Fingerlings No. 3.

Crawford county,	100
Fayette county,	100
Green county,	200
Total,	400

Catfish, Fingerlings No. 2.

Crawford county,	1,500
Jefferson county,	3,000
Fayette county,	1,000
Total,	5,500

Catfish, Fingerlings No. 1.

Crawford county,	1,200
Mercer county,	1,600
Warren county,	400
Total,	3,200

Yellow Perch, Fingerlings No. 2.

Crawford county,	600

Sunfish, Fingerlings No. 1

Crawford county,	4,000
Warren county,	1,000
Total,	5,000

Sunfish, Fingerlings No. 2.

Clarion county,	2,000

Calico Bass, Fingerlings No. 1.

Warren county,	2,000

Frogs.

Crawford county,	15,000
Warren county,	25,000
Total,	40,000

Summary.

Brook Trout, Fingerlings No. 1,	3,571,000
Adult Brook Trout, Males,	1,075
European Brown Trout, Fingerlings No. 1,	50,000
Calico Bass, Fingerlings No. 1,	2,000
Sunfish, Fingerlings No. 1,	5,000
Sunfish, Fingerlings No. 2,	2,000
Yellow Perch, Fingerlings No. 2,	600
Catfish, Fingerlings No. 1,	3,200
Catfish, Fingerlings No. 2,	5,500
Catfish, Fingerlings No. 3,	400
Frogs,	40,000
Total,	3,680,775

ERIE HATCHERY, STATION NO. 2.

Report of Philip H. Hartman, Superintendent.

Hon. W. E. MEEHAN,
Commissioner of Fisheries.

Sir: I take pleasure in submitting to you my third annual report from December 1, 1907, to November 30, 1908.

It pleases me to say that this station's record of the previous year was reached and passed by millions. The total output for the past year was 247,532,300 fry and frogs.

After filling this hatchery with white fish and herring eggs last fall, I had a surplus of 17,240,000 herring, and 24,372,000 white fish eggs, which were shipped to the Crawford hatchery to be hatched. The fry were returned in March and planted in Lake Erie. The white fish and herring eggs here began to show the eye December 10, 1907; started to hatch March 3, and were all out March 21.

The fishermen have had the best fishing year for white fish that has ever been known, more white fish being caught out of Erie than ever. The fishing season for lake herring came on with another surprise. From the very outset the catches were heavy; in fact so heavy that from September 15 to about the 20, the dealers were unable to handle the immense hauls that were coming in and were forced to limit the steam tugs to 4,000 pounds, and smaller boats in proportion.

Many of the boats after unloading their allowance would have from 1,000 to 2,000 pounds left aboard the tugs. A few of the tugs took what they had left over out in the lake and dumped them overboard. The majority of them took them to their docks and the news soon spread throughout the city that fish were being given away at the wharves. In a short time the docks were swarming with men, women and children with baskets and carts and in a few minutes time a ton or more fish would be moving up the hill to hundreds of homes throughout the city

There is no doubt but that this wonderful fishing in most part is due to artificial propagation and a great deal of credit is due to the Honorable W. E. Meehan, Commissioner of Fisheries, who ever since the creation of the Department of Fisheries has insisted on and assisted in every way to increase the output each year to save more of the waste and put more life into waters of Lake Erie, and the results of his efforts are coming to light more every day .

No doubt there will be times when fishing will not be so good, as there are and will be spawning seasons when we will not be able to get vast quantities of eggs, and at such times the quality of eggs will be found to be bad which will cause a slight slump in fishing following such unfavorable seasons for gathering spawn

There were planted in Lake Erie from this station in the past year 44,614,800 white fish fry and 16,302,000 lake herring fry

The next fish propagated was the pike-perch of which 70,312,500 fry were hatched. Seven million nine hundred thousand went to interior waters and the balance in Lake Erie. These eggs were taken by the United States Bureau of Fisheries at Toledo, Ohio, and shipped by rail to Erie. In all 203,350,000 eggs were taken. Fourteen million, eight hundred and seventy-five thousand green eggs were sent to Torresdale hatchery and 15,750,000 green eggs and 9,000,000 eyed eggs to Wayne hatchery, and 23,100,000 green eggs to Crawford hatchery, leaving a balance of 140,625,000 at this hatchery. I am sorry to say that some of the eggs were not as good quality as usual owing to storms and other unfavorable conditions which existed at the time the eggs were being taken

Blue pike work was largely increased here by a new system introduced by Commissioner Meehan called field work. Through it I have made a new record in the output of the blue pike; the astonishing number of 96,250,000 blue pike fry were hatched here last spring. This is in fact many millions more than have ever been hatched here before. The first eggs were taken May 5, the last May 20. They began to show the eye May 15, hatched May 17 and were all out May 27.

I am safe in saying that blue pike eggs are about the hardest eggs known to care for throughout the period of incubation. They clean on the same order as pike-perch eggs. At the time blue pike are in, the temperature of the water is so high that fungus starts much more quickly so that if the eggs are not watched and constantly cleaned and cared for, one would have very few fry from a vast amount of eggs. The eggs of blue pike are smaller than those of pike-perch, enough so as to be perceptible and are not so adhesive as pike-perch eggs when fresh from the field. What is termed the dry method by fish culturists was used exclusively in the taking of these eggs and the results proved satisfactory.

There were 20,225,500 yellow perch fry hatched and planted in Presque Isle Bay; these were hatched at the same time as the blue pike.

There was a decrease in the amount of perch hatched here, being short 58,874,500 of last year. This was owing to the falling off of the amount of eggs we usually got from Wayne county.

April 9 I began stocking the ponds with frog spawn. In five days I had both ponds stocked with all I dared put in. All were hatched in about six days. They were feeding well and growing fast until May 25, when they began to die. In one pond in two days I lost 140,000 tad-poles. With the other pond I was more fortunate. The tad-poles grew to full size and frogs began to show up July 1. I put floats in for them and by July 15 there were thousands of frogs seen upon them. July 22 I began filling applications and that night something came over them so that by morning I had lost about 5,000 frogs. The night of July 23 about 3,000 more, and from then on very few. To this day I am at sea what to attribute the loss to after they had once become frogs. If this be a natural mortality which occurs after they arrived at the frog stage, I am afraid it will take a few years more of hard study to have frog culture perfect.

There was only one bid received on the contract for catching carp, that of Mr. John Brice, of Erie. I was authorized by Commissioner Meehan to let the contract to Mr. Brice, he taking it for two months, from June 1, to July 31. There were 40,086 pounds of carp taken in the two months.

There was a slight decrease in the amount of license money collected the past year, which decrease would have been much more had it not been for the new patrol tug, Commodore Perry, which was built within the last year by the Department. In other years tugs operated from near ports of adjoining states would run into Pennsylvania waters, set their nets one day and pull them next day without paying a license.

The Commodore Perry was put on patrol duty in June. The result was that quite a lot of tug owners from adjoining states sent in for licenses, finding it cheaper to take out a license than have their nets confiscated when found to be in Pennsylvania waters.

Warden J. P. Albert also rendered good service in enforcing the license laws. He caught quite a number fishing night lines. Instead of arresting them he would give them one or two days time to come and take out a license. Some would write for them, others would come in person. This method gave satisfaction to all and did not create ill feeling, which usually occurs when arrests are made.

November 19 the first shipment of white fish eggs arrived from Port Clinton, Ohio. From the 19 to 27, 62,820,000 eggs came in. Of this number 10,944,000 were shipped to Union City hatchery and 7,200,000 to Crawford hatchery. The balance, 44,676,000 were held at this station. (An adition to the above in the number of eggs taken will be found in my report of field work).

There were 1,824 names registered in the Visitor's Book the past year and about half as many more came who did not care to register.

I herewith wish to state that the hatchery building has become unsafe and dangerous to work in. Furthermore it is far too small for the vast amount of work being done and which is steadily increasing each year.

Thanking the Commisioner of Fisheries, the Hon. W. E. Meehan, and all connected with the Department for their hearty co-operation and suport the past year, also hoping this report will meet with your approval, I remain

Yours very respectfully,

PHILIP H. HARTMAN,
Superintendent...

ERIE HATCHERY, STATION NO. 2.

Fish, etc., distributed from December 1, 1907, to November 30, 1908

White Fish,	44,614,800
Lake Herring,	16,302,000
Wall-eyed Pike,	70,312,500
Yellow Perch,	20,225,500
Blue Pike,	96,250,000
Frogs and Tad-poles,	47,500
Total,	247,752,300

DISTRIBUTION OF ADULT FISH.

Erie County, Union City Hatchery.

Black Bass, adult small mouth,	153
Rock Bass,	129
White Bass,	56
Calico Bass,	40
Blue Gills,	65
Yellow Perch,	1,190
Sturgeon,	2
Total,	1,625

CRAWFORD COUNTY HATCHERY.

Black Bass, small mouth,	77
Blue gills,	197
Catfish,	12
Sturgeon,	2
Yellow Perch,	1,195
Total,	1,483

ERIE COUNTY, CORRY HATCHERY.

Bull-heads,	196
Rock Bass,	25
Total,	221

WAYNE COUNTY HATCHERY.

Black Bass, small mouth,	32
Blue Gills,	125
Total,	157

PHILADELPHIA COUNTY, TORRESDALE HATCHERY.

Blue Gills,	163

Summary of Adult Fish Distributed.

Black Bass,	262
Rock Bass,	154
White Bass,	56
Calico Bass,	40
Blue Gills,	550
Yellow Perch,	2,385

Sturgeon,	4
Catfish,	12
Bull-heads,	196
Total,	3,659

Output of Wall-eyed Pike.

Clinton county,	1,800,000
Erie county,	500,000
Erie county, Lake Erie,	62,412,500
Lycoming county,	2,250,000
Montour county,	700,000
Mifflin county,	200,000
Northumberland county,	500,000
Warren county,	1,950,000
Total,	70,312,500

Frogs and Tad-poles.

Erie county, Peninsula,	16,000
Elk county,	3,500
Lycoming county,	9,000
Northumberland county,	19,000
Total,	47,500

White Fish Fry.

Erie county, Lake Erie,	44,614,800

Lake Herring Fry.

Erie county, Lake Erie,	16,302,000

Yellow Perch Fry.

Erie county, Presque Isle Bay,	20,225,500

Blue Pike Fry.

Erie county, Lake Erie,	96,250,000

White Fish and Herring Eggs Taken This Fall.

White Fish eggs from Port Clifton,	62,820,000
White Fish eggs taken at Erie,	1,260,000
Total,	64,080,000

Herring eggs from Port Stanley, Ontario,	9,600,000
Herring eggs taken at Erie,	47,920,000
Total,	57,520,000

White Fish Eggs Distributed.

Crawford hatchery,	7,200,000
Union City hatchery,	10,944,000
Erie hatchery,	45,936,000
Total,	64,080,000

Herring Eggs Distributed.

Union City hatchery,	17,680,000
Erie hatchery,	44,640,000
Total,	62,320,000

Herring eggs all told,	57,520,000
White Fish eggs all told,	64,080,000
Total,	121,600,000

BELLEFONTE HATCHERY, STATION NO. 3.

Report of Superintendent Howard M. Buller and Assistant Superintendent, B. O. Webster.

HON W. E. MEEHAN,
Commissioner of Fisheries, Harrisburg, Pa.

Sir: Herewith is submitted the report of the operations of the Bellefonte hatchery for the year ending November 30, 1908:

Owing to a terrible cloud burst early in the year, of which a detailed account will be given later, it was necessary to do much work repairing the damage caused by that storm before is was possible to get at the new ponds and other improvements which had been so wisely and well planned by you.

Shortly after December 1st, 1907, Mr D. W. Houser was sent to Weissport to take and ship from there to the Wayne County Hatchery 200,000 brook trout eggs which he did and returned to this station December 13.

During the month of December and until the fourth of January, 1908, there was one man short on account of Mr. Harry Griffith being stationed at Penn Forest, where Superintendent Berkhous was in charge of the collection of eggs for the State. Upon the latter date he returned to this station and during the remainder of the year all regular employes have been on duty at the station.

The total take of eggs this year was about 2,500,000, all obtained from the stock of fish in our ponds. This we consider a very good take of eggs, as the majority of the fish were small and naturally gave a small number of eggs per fish, and considering the loss we sustained from the cloudburst

During the months of December and January all were busy engaged in caring for the fish and eggs and it must be said that although the quantity was smaller than in the past, the quality of both the eggs and fish was par excellence. Very few bad eggs were picked off and when the fish were hatched they were strong and rapidly grew into as fine a lot of young brook trout as one could wish to see.

The year before there was an epidemic of sore gills which carried off a good many of the small fish and naturally smething of the kind was expected to happen this year and undoubtedly a large number of young fish would have been lost if the trouble had not been noticed while the fish were still in the sac stage and most drastic measures applied to check it. One would hardly believe that a fish so tender as the brook trout is while in the sac stage, could be doctored much, but it was a case of die for sure if they were left to go as they had started, so a series of salt baths were arranged. First, the salt was put into the head of the trough and allowed to dissolve and work through the whole trough in that way, but as that did not accomplish the desired result it was scattered through the trough and by passing

the hand back and forth over the bottom of the trough the salt was dissolved and the fish stirred up bringing the remedy into direct concontact with the parts diseased

This was done for three days in succession and then they were allowed to go for three days without doctoring. It was found that in cases where the fish had not gone too long before the treatment began. that the three days' application was enough, but in some of the troughs it was necessary to carry it further. Naturally the fish got very weak but after a few days they not only regained their strength but did not show any signs of gill trouble.

The fish at this station spawn very early and in consequence some of the fish were ready to ship by the first of January which made it necessary to commence filling the nursery pond on that date in order that the troughs in the house might be thinned out as they are originally filled too full to hold all when they become fingerlings.

About January 1st, nursery pond No. 1 was cleaned out and filled and the remaining ten ponds were gotten ready and filled in like manner as soon thereafter as possible. After the fish in pond No. 1 had been out for about three or four weeks there seemed to be something the matter with them and as soon as it was noticed they were taken out and removed to a trough in the house where they could be taken care of to better advantage, but it was impossible to save any of them and not long after the sickness was noticed in No. 1 all the others became affected and the result was that all small fish for stock in the house and all the fish in the nursery ponds were transferred to the upper row of the nest of 13 cement ponds known as the upper hatchery. It was found that it was the only way we were going to be able to save any of the young fish that had been held back for breeders.

As these fish have not been sorted out yet the number can only be estimated, but there are probably in the neighborhood of 15,000. It is a small stock for this station to carry over but it was unavoidable this year. However, the size of the fish somewhat make up for the lack in numbers as many of them are as large as the two year olds we have in the lower row of the same nest of ponds.

The idea of introducing new blood into our fish was tried again this year without success. Superintendent Haas, of the Spruce Creek station, delivered 25,000 fine fingerling brook trout in exchange for a like number of our fish, but they were overtaken with the gill trouble and all succumbed. The only way it will be possible to start any new blood in the fish here it appears will be to send the eggs here green and carry them in this water through the entire period of incubation, as it appears to be impossible to rear fish that have been hatched in water of less hardness than the water at this station. This is an important matter and should be given most serious consideration.

The shipping was started on March 2, and by using the Department fish car was carried to completion much sooner than had it all been done by messenger, as the car on one trip took out 342 cans. Shipping was finished April 11. One thousand five hundred and eleven applications for brook trout were filled.

At the annual meeting of the Superintendents at your office in January it was decided to try the raising of catfish in the large pond back of the Assistant Superintendent's house. According 200 adult catties were shipped from Torresdale hatchery and put into the pond. The water being cloudy most of the time it was impossible to keep very close watch on their movements, but it was found upon close ex

amination that some of them were working. We did not find any nests with eggs on, but in August there appeared one or two schools of small fish and when taken out and counted we had enough to fill the applications on hand.

In the midst of our shipping and at a time when every man at the station had all he could do to keep ahead of his work, there came upon us one of the worst cloud bursts that has ever been known in this community and this station suffered from loss as a result of the storm more than any one else in the vicinity. The spring run which crosses the grounds about 300 feet back of the hatchery over which the meat house was built the foundation of which was used to dam the water back making a pond to furnish water power for cutting our feed, is the course by which all surface water for a mile or more up the mountain is carried into Logan Branch, entering the Branch just below where the meat house stood. It can readily be seen that we were sure to get the full force of the flood, being the last place it struck before entering the larger stream.

The rain started in the evening and continued, one storm following another in quick succession, nearly all night until with a mighty rush the water came down the mountain following the pike in its natural course until it had increased in volume to the extent that the road was overflowed and everything that was not absolutely solid was carried along with it. A great quantity of logs, boards and other refuse became entangled at the bridge which crosses the run just below the Ross spring making a dam which caused most of the trouble and damage that was done to the hatchery ponds and grounds.

When this dam was formed the water became backed up until it overflowed the road on both sides of the bridge and spread out until it had reached the large gate entering the hatchery grounds about three hundred feet from the bridge, the water being nearly a foot deep over the whole expanse. The ground on the hatchery property gradually slopes to the north from the large gate which carried all the water toward the back of the hatching house

All the ponds back of the hatchery, 11 in number, were filled with fish and the result was when that great volume of water came down and passed over them fully one foot above the tops of the highest walls, there was much damage. Three small ponds were submerged to a depth of three feet. All the fish in those ponds were lost and about 5,000 got out of the other seven, making a total loss of about 10,000 adult fish.

The water came into the back of the hatchery and covered the floor to a depth of 18 inches making a very muddy floor when the water subsided; otherwise no damage was done in the house. The meat house, however, was put out of commission by having the north wall washed out causing the building to settle and wrenching it badly out of shape. It was possible to work it back into nearly an upright position without having to tear it to pieces when it was set upon the new walls that have been built for it

The lower end wall of a small pond near the Dale line, together with a dam made across the run to supply the pond with water, were washed out and utterly ruined and many things like shades and lumber were washed away. The wire fence along the west side of the lower field was all torn down and the wire and posts deposited in the field and along the railroad track for some distance. Brook trout were so plentiful in Logan Branch after the storm that a woman living

along the stream in dipping up a pail of water for use in the house found to her surprise that it contained a fine specimen, and ducks were noticed along the stream coming ashore to kill and swallow the trout that they had caught.

That fish were plentiful was further demonstrated by the fact that one hundred and five fishermen lined the stream from the station to Bellefonte as early as 6 o'clock in the morning of the first day of open season and nearly all reported good catches.

Just as soon as it was possible to take up the work of repairing the damage done by the storm, it was done, but there was fish work that claimed our attention for some time

According to the prearranged plan of trying to raise some silver side salmon (Oncorhynchus Kisutch) here, a messenger was dispatched to Wayne County Hatchery to get the fish which had been hatched there from eggs obtained from the United States Bureau of Fisheries. It was understood that we were to have about 10,000 of these fish to experiment with. The fish were in the sac stage when they were delivered with the messenger and consequently they did not carry as well as they would had they been a little older. However, the majority of them came through all right and were put out in two troughs in the house. Being hatched from wild fish eggs the fry were very wild and easily frightened. They were covered up and not allowed much light and it was a very short time before they began to feed. The feeding was done under the covers all the time and it seemed impossible to give them too much. As soon as they were an inch and a half long they were put into one of the 13 nursery ponds in the lower row and have been doing very well ever since. I am safe in saying that not more than five fish have died in that pond since they were put out. A second lot of the same kind of fish were brought down from the Wayne hatchery in July, making a total on hand of about 10,000 well developed silver side salmon. If they will do as well in the year to come as they have this year, you can look for a good take of salmon eggs at this station in a short time.

After the large ponds had been cleaned and various other necessary work around the station had been done, the new work was taken up. The repairing of the meat house was the first consideration and as soon as the house could be jacked up and rolled off the old foundation, one of the cement walls that had been undermined and toppled was straightened and the other torn out and new ones built, as the first idea was to put the house back in its old place with the addition of another set of eight foot splash boards to provide ample space for the water in case of flood. In order to provide a space sufficiently wide to carry off the water at flood tide a great deal of digging and scraping was necessary below the house and a wall was built extending from the south foundation wall of the meat house west towards the railroad track to make it possible to grade the ground there.

We had always been handicaped in cutting our meat on account of the small flow of water, where the house originally stood, and it was suggested that the house be moved down stream about 100 feet, which would enable us to get not only the water that we were getting but all the water that was used in the hatchery and ponds. After looking over the situation it was decided that the move would be a good one and forever settle the question of lack of water and the possibility of another washout as the foundations could be built two feet higher

than the highest water mark and then not be higher than ground level there. The original foundations were completed, however, and used for building a bridge which has been badly needed here for some time. By means of this bridge we have a short cut to the station which will save a long haul and much time during the shipping season.

The ground was staked off and the trenches dug for the foundation wall at once which was six feet high, 20 feet long and 10 inches thick, having a space seven feet wide for a sluice way under the house and arranging for another overflow on the west side of the house eight feet wide. A wall 100 feet long by four feet high and 10 inches thick was run parallel with the railroad along our line to meet the cross wall from the foundation. This makes a pond with about 3,128 square feet of surface that can be filled in about 20 or 30 minutes to a depth, at the splash boards, of about three and a half feet, which gives ample power to run the water wheel for all the cutting we have to do. As soon as the foundations were completed the house was moved on them and the wheel installed. It was found to be all that we had anticipated. The complete job makes the house out of danger from floods, gives us ample water supply and presents a much neater appearance than it did before the flood. From the standpoint of convenience it alone has justified the expense.

There were in all about 3,218 cubic feet of cement wall built this year. For doing this work there was received one two hundred barrel car of cement, one car of lumber and a car of sand. The sand and cement has all been used but there remains enough of the lumber to make several shades for the new ponds.

After these walls were built it was necessary to do a large amount of grading to put the ground in passable condition and as soon as this was completed all hands were transferred to the building of the group of eight new ponds to be conected with the original nest of 13. the uper race to be continued from the north end of the old race to a distance sufficient to allow the building of four ponds the same style as those of the original 13 to be fed from this race. The ponds were to be built parallel with the old ones with a 10 foot ground space between each pair of ponds. The grounds upon which these ponds were to be built is heavy clay and comparatively level and dry which enabled us to push the work to completion in a short time. These ponds are 14 feet wide by 35 feet long and were built one above the other so that the water supply from pond No. 1 passes through 2, making the same water do double duty by giving it a second aeration when it falls into the second pond, the walls of which were dropped about 10 inches.

The trenches for the wall had to be dug only about one foot deep to get a solid foundation and give us the desired depth to our ponds. As has been done in the past only the trenches for the walls were dug at first and the frames for the walls set up in them and when the pond walls were completed the dirt was thrown out. At the lower end of the group a race three feet wide and about four inches deeper than the ponds was built to carry off the waste water.

In this race a series of splash boards were arranged for the purpose of keeping the refuse from running into the ponds below when these ponds are cleaned out. We use the same method on the old race but have to build a temporary dam with boards and clay while in this race we have grooves made in the walls in which regular dam boards can be used, making it much more convenient and satis-

factory The summer being very dry we were able to keep at this work constantly and soon had the eight ponds completed.

The next cement work was done on a pond that was started about five years ago. The excavation was made and cement abutments were built at the head and foot of the pond but no side walls were put in. It was thought best to raise the walls six inches higher than the old abutments to give the water a fall into the next pond. This was done and the side walls were put in making a fine large pond 26 feet wide by 85 feet long which was cleaned out and immediately put into commission.

The three old ponds with sod sides which were located below the group of concrete ponds back of the hatchery were torn out and converted into two fine large ponds made of concrete.

It was first necessary to build a long wall on the south side of the open race which carries off the water from the ponds and the hatchery. The south wall of the ponds to be used as the other side of the race, the two walls setting about six feet apart provided with grooves and splash boards and screens in case we care to use it for holding fish at any time

Quite a little difficulty was encountered in building these ponds on acount of the water we had to contend with, but by means of dams and ditches it was possible to get the forms set and the walls built in very good shape. These two ponds are each 50 feet long by 25 feet wide and will be supplied with water from the two ponds immediately back of the hatchery making two more ponds supplied with spring water. Most of the ponds on the grounds are supplied with water from the race and are cloudy most of the year and the addition of these ponds will make four instead of two which will always be clear.

The nursery ponds west of the hatchery have not given satisfactory results for some time and it was decided to make an experiment of the first pond of the group to see if better results could not be obtained by dividing the pond, which is eight feet wide by 24 feet long, with a cement wall about three inches thick.

This wall to extend within six inches of the lower end of the pond where a cross wall six inches wide with space for splash boards and screens was to be built, making two ponds each four feet wide by 23 feet long each supplied with water in the centre of the upper end and splash board in the centre of the lower end which will make it possible for the current to flow through the centre of the pond.

The results of these experiments will have to be recorded in next year's report as they will not be used until next year's stock of fry are put out. The total pond construction this year is as follows:

Eight nursery ponds 14 feet wide by 35 feet long making in all a nest of 35 nursery ponds in the upper hatchery. Two large ponds below the hatchery 25 feet wide by 50 feet long. One large pond west of the hatchery 26 feet wide by 85 feet long and the partition in the nursery pond making two ponds four feet wide by 23 feet long, a toal of 13 ponds added to what are already on the grounds, making a grand total of 62 ponds, all filled with fish except the new ones and six of the group made last year. As soon as possible after the building was finished the work of filling and grading was commenced and carried until it became necessary to drop all other work and put in full time for all hands on the collection of eggs which came on this year much earlier than usual

Each year the fish at this station seem to begin spawning a few days earlier Last season they commenced spawning on the 15th of October, while this season opened on the 12th of October. One ripe female spawned on the 5th of September, 1908. One peculiar thing which was noticed this year was the fact that the fish, after the spawning season was once well started, would ripen up over night, and if the eggs were not taken the next day they would deposit them in the pond which made the collection much harder, both for the men and the fish, as the whole stock had to be gone over each day. This was especially so among the three and four year olds. When we got into the two year olds we found that the customary methods could be used and still get all the eggs. To assist in this work, Mr. Nesley, the State Superintendent of field work, and Mr. Jaynes, his assistant, were sent here on the 20th day of October and most ably assisted in the work as they were directed Mr. Jaynes was called home on the 26th by the illness of his father and Mr. Nosley left us on the 7th of November after the collection was practically finished.

In all about 3,000,000 brook trout eggs were taken which filled the house comfortably. and barring any bad luck, we expect to have the usual hatch. Our rainbow and steel head trout came in much earlier this year than last, commencing to spawn on the 27th of November. We will not have a large take of rainbow trout eggs this year on acount of the large number which escaped during the flood. It is true that our young fish will spawn this year, but the first and second year that they should spawn there is a large per cent. that will neither give milt nor eggs so we are not looking for more than 150,000 eggs. The total stock of fish on hand to date is as follows:

Four year old brook trout,	6,000
Three year old brook trout,	9,000
Two year old brook trout,	15,000
One year old brook trout,	15,000
Rainbow trout all ages,	2,500
Silver side salmon,	10,000
Gold fish, all ages,	600
Catfish, adults,	50
Catfish, fingerlings,	500
Atlantic salmon, adults,	3
Total fish on hand,	58,653

Recommendations.

The most important recommendation for this year's improvement is the large pond to be built east of the hatchery for holding all large fish. This is a very important improvement and should be put in as soon as possible. As a fish pond it will be a great success and the east bank will act as a protection in case of a heavy flood like we had last spring.

The Superintendent's cottage is badly in need of a new roof as the old one leaks badly and it is very necessary that a cellar wall be built under the house used by the Assistant Superintendent. The hatchery should have another coat of paint next spring as in many places the paint has all scaled off New and up to date wire fences are badly needed for all the hatchery property and the car barn must be repaired soon or it will utterly collapse. A new ice house is badly needed this year also.

This report is respectfully submitted.

H. M. BULLER,
Superintendent.

BELLEFONTE HATCHERY, STATION NO. 3.

Fish, etc., Distributed from December 1, 1907, to November 30, 1908.

Brook Trout, Fingerlings No. 1.

Bucks county,	1,500
Berks county,	49,500
Cumberland county,	103,500
Columbia county,	18,700
Clinton county,	37,500
Centre county,	347,500
Chester county,	46,500
Carbon county,	10,500
Dauphin county,	16,500
Delaware county,	6,000
Franklin county,	1,500
Huntingdon county,	25,500
Lackawanna county,	1,500
Lancaster county,	72,000
Luzerne county,	75,000
Lebanon county,	67,500
Monroe county,	285,000
Mifflin county,	102,000
Montgomery county,	45,000
Northumberland county,	55,500
Philadelphia county,	6,000
Pike county,	21,000
Sullivan county,	70,500
Schuylkill county,	88,500
Lycoming county,	81,000
Wyoming county,	19,500
York county,	513,000
Total,	2,336,000

Rainbow Trout, No. 1 Fingerlings.

Blair county,	6,000
Clearfield county,	45,000
Cumberland county,	30,000

Centre county,	82,500
Monroe county,	30,000
Lancaster county,	1,500
Total,	195,000

Brook Trout, One Year Old.

Philadelphia county,	200

Brook Trout, Two, Three and Four Year Old.

Centre county,	10,400
Monroe county,	3,000
Total,	13,400

Rainbow Trout, Four Year Olds.

Centre county,	400

Gold Fish Yearlings.

Dauphin, county,	42
Mifflin county,	12
Total,	54

Catfish.

Union county,	2,350

WAYNE COUNTY FISH HATCHERY, STATION NO. 4.

Report of Nathan R. Buller, Superintendent.

Hon. W. E. Meehan, Commissioner of Fisheries:

Sir: I herewith submit my annual report of the Wayne Fish Hatchery, Station No. 4, from December 1, 1907, to November 30, 1908:

Owing to some cause the brook trout eggs received from other than State Hatcheries did not do well, hence the output for the Spring of 1908 was less than previous years. The output was therefore practically from eggs gathered on the plant. The loss of eggs taken at this place from our own fish was only five per cent. this season. For the Spring of 1909 shipment the eggs have still done better, they are now hatching and our loss to date has been but two per cent. and the eggs are hatching exceedingly strong fish. Our loss in adult fish through the spawning season will be greater this year than previous years, due to the small circulation of water through the ponds.

I have, in my previous reports, mentioned the poor facilities for handling the work satisfactorily at this station, through its not being completed. During the severe drought there was at all times sufficient water flowing to carry on the work, if we were in position to properly control it. Our work started in that direction last July by your order in the building of a large supply reservoir at the head of the property, but it is still in an uncompleted stage. We have completed as much of this work as it was possible for us to do this year. It is an immense undertaking for four or five men to complete, that being all the force that we could put at the work, and then only from July to November when the ground froze up and the work had to be stopped. All other work was laid aside in order to get this reservoir completed to such a point as we could run an underground pipe line of water to the hatchery. This reservoir when completed will also serve as a large yellow perch pond.

From March to July during what little time could be spared from the work of propagating fishes and distributing them, the employes constructed four trout fry ponds, concrete bottom and sides; one of them 26 feet long, 6 feet wide and 3 feet deep; two, 30 feet long 6 feet wide, 3 feet deep; one, 20 feet long, 10 feet wide, 2 feet deep, besides constructing a concrete spawning race 50 feet long, 4 feet wide, this is in connection with the large trout pool. Also put in 150 feet of concrete retaining walls on both sides of the Lackawaxen Creek, raised the spring walls 14 inches and built the concrete reservoir at the northwest corner of the spring. The reservoir is 5 feet long, 5 feet wide and will be when completed 11 feet deep; at its present stage it is 5 feet deep. It receives the water through an underground pipe line from the main reservoir, which is now under construction. The water from this reservoir can be tapped and used in any part of the building for any purpose, independent of the spring

water. It will also feed the new battery when that is completed. We have the ground removed for the new building ready to put in the balance of the new floor. The building then when completed will be 80 feet long by 70 feet wide. On account of the employes of the hatchery assisting in the field work we could not accomplish more improvements, besides on account of the great drought we practically had one man kept busy looking after the water supplies, and as the forest fires were raging for weeks, in order to save the property from destruction by fire, required a great deal of time and labor. On account of the great and prolonged drought throughout this section all streams with the exception of the Lackawaxen, the Dyberry, and the Lackawanna were entirely dried up. All tributaries to these streams were completely dry causing the loss of all the trout and it will require the greatest care in planting the fish to get them back to their original state. Besides the work accomplished by the employes of the hatchery there has been an attractive feature added to this place, namely, the construction of the macadamized State road from the village of Pleasant Mount through the hatchery grounds to within about 300 feet of the hatching house which adds greatly to the appearance of the grounds.

Rainbow Trout.

There still remains at this plant about 1,000 large adult rainbow trout four years old. As our water supply here for trout, you are aware, is very limited, I suggested to you early in the spring to transfer these trout to the Bellefonte hatchery, which will allow more space to devote to brook trout. The eggs from these trout last season was about 300,000. They are now spawning, this being the month of December, and by all appearances the take will be much smaller this year than last, there being an extraordinary large number of sterile fish and the females that are producing eggs only produce a small number. I have counted the eggs from females weighing two pounds to be but 150 eggs from a single fish.

Silver Side Salmon.

During the month of January I received a consignment of 100,000 silver side salmon eggs from the United States Bureau of Fisheries' Hatchery, State of Washington. They arrived after a seven days journey in very fine condition, every egg perfect. Under your instructions I held the fry until the month of April, when they were deposited in various tributaries of the Delaware river with the exception of 10,000 which were forwarded to the Bellefonte Hatchery and 5,000 which I retained here and have at the present time. They were very ravenous feeders and were kept in the pond at a temperature of 65 to 70 degrees Fahrenheit.

Acting under your instructions I have given particular attention to the cultivation of bullheads, it being your policy to extend the work of rearing what are called the commoner fishes, hitherto neglected. The results have been very gratifying. One pond is 125 feet long by 40 feet wide varying in depth from 18 inches to 5 feet is devoted to bulheads and from it this year there were distributed 72,000 one year old, varying in length from 3 to 6 inches, 41,000 advanced fry at the age of two months and have remaining to distribute one year old about 20,000. There is a parent stock of fish of 200.

Pickerel.

The success in the hatching of pickerel was very gratifying. Comparing my table of output, you will find the output larger this year than previous years. The eggs for this work were all gathered by the field force. In former years on account of the small supply of water that must be circulated through the jars in order that the eggs do not overflow the top we had more or less eggs to smother just before the hatching period, but through some new ideas gained by observation, avoided this trouble this year by placing men to attend to the jars constantly day and night, and by taking hold of the glass tubes that supplies the water through the jars and operating it in a circular manner caused a more frequent circulation of the water through the string of eggs and at the same time placing them in a different position. There is no question but what the propagation of pickerel artificially has been very beneficial to our lakes throughout this section. I know by reports and also by observation that the pickerel caught are a greater number and of a better size, due in a great measure to the infusion of new blood which is possible by gathering the eggs from so many different lakes. There are no adult pickerel kept in the ponds at the hatchery, as by past experience it has been found impossible to hold pickerel in small ponds for the reason that the pickerel must obtain its food alive.

Lake Trout.

You had forwarded to me from the Union City Hatchery 50,000 lake trout eggs, which were duly hatched. These fish were planted in various lakes throughout this section and we have reports of quite a few lake trout being caught in the different lakes, and I suppose that the catch would still be greater would more of the fishermen fish specially for them.

Frogs and Tadpoles.

The building of the new State highway into the hatchery grounds and our extension of the driveways destroyed the space formerly used for the propagation of frogs at this place. By the efforts of the field force we were able to fill all applications on file here for tadpoles and frogs and it will be necessary to continue doing this until such a time that we will be able to construct new yards.

Sunfish.

A number of adult fish of the blue gilled species forwarded to the plant from Lake Erie. These fish arrived very late in the season and at first I had feared they had already spawned but about ten days after placing them in the ponds I found they were building nests and the hatch was very satisfactory. Out of the 100 fish that were sent here I counted 30 nests, but was unable to send these fish out this Fall.

Yellow Perch.

It was in the year of 1905 that we first took up the hatching of yellow perch at this station, and from that time on I have given this matter very careful consideration. By the increased percentage of fish hatched our work shows that we are making and learning improvements each year, not only in the hatching of the eggs but in the planting of the fry. We have had occular demonstration that the perch planted in the fry state is productive of good results.

Rock Bass.

Owing to the lack of time and available space I did not put forth much effort in the rearing of rock bass, having only one small pond for that purpose. The results were when the pond was drawn off this fall in the month of October, 3,000 bass from one to one and a half inches in length.

Small Mouth Bass.

During the early spawning season had about 75 adult bass in the breeding pond and most all the bass shipped from this station were from field operation carried on by the regular field force. It was imposible for me to keep a separate record of what came from the field and what were taken from the hatchery ponds. During the latter part of July I received a consignment of 75 adult bass from Lake Erie; four days after placing them in the ponds they commenced to build nests and deposit their eggs. As this was exceedingly late in the season and the waters throughout the different lakes had become so low and stagnant I concluded it would be a poor policy to remove and plant the fish under such conditions, so I will not be able to know how sucessful this late spawning was until I draw off the pond in the spring of the year.

Wall-Eyed Pike.

There was forwarded to this station from the Erie Hatchery several cases of wall-eyed pike eggs and as in previous years they were hatched and planted in the Susquehanna and Delaware rivers.

Recommendations.

In concluding my report I desire to make the few recommendations for your consideration. That an effort be made to secure a special appropriation of money to finish the contemplated work at the hatchery namely: The finishing of the hatching houses, the building of an ice house and tool and repair shop and power plant, the completion of the ponds necessary to carry on our work sucessfully, the grading and arranging of the yard surrounding the dwelling house of the superintendent, the erection of a hydraulic ram to pump water into the dwelling house and stock barn, and the completion of the walls bordering the Lackawaxen.

The output for the year commencing December 1, 1907, and ending November 30, 1908, follows:

The above is respectfully submitted,

N. R. BULLER,
Superintendent.

FISH, ETC., DISTRIBUTED FROM DECEMBER 1, 1907, TO NOVEMBER 30, 1908.

Pickerel.

Pike county,	1,900,000
Northampton county,	2,000,000
Lycoming county,	8,500,000
Columbia county,	1,450,000
Susquehanna county,	1,400,000
Bradford county,	1,000,000
Northumberland county,	1,200,000
Montour county,	1,000,000
Tioga county,	1,900,000
Schuylkill county,	1,600,000
Lehigh county,	1,350,000
Luzerne county,	10,500,000
Centre county,	2,750,000
Carbon county,	5,350,000
Wyoming county,	3,750 00
Monroe county,	10,850,000
Lackawanna county,	21,650,000
Union county,	1,250,000
Snyder county,	1,250,000
Wayne county,	47,100,000
Total,	127,750,000

Silver Side Salmon.

Distributed in tributaries of Delaware River, 90,000 advanced fry.

Rainbow Trout, Advanced Fry.

Carbon county,	20,000

Tadpoles and Frogs.

Northumberland county,	17,000
Luzerne county,	13,000
Berks county,	6,000
Wyoming county,	3,000
Pike county,	5,000
Philadelphia county,	5,000
Cambria county,	4,000
Wayne county,	4,000
Perry county,	21,000
Juniata county,	9,000
Huntingdon county,	19,000
York county,	128,000

Dauphin county,	2,000
Columbia county,	4,000
Union county,	26,000
Snyder county,	8,000
Lycoming county,	2,000
Bradford county,	4,000
Carbon county,	2,000
Lackawanna county,	10,000
Adams county,	3,000
Elk county,	1,000
Montour county,	5,000
Lehigh county,	4,000
Susquehanna county,	8,000
Schuylkill county,	23,000
Chester county,	16,000
Cumberland county,	2,000
Northampton county,	3,000
Indiana county,	3,000
Centre county,	28,000
Total,	388,000

Brook Trout, Advanced Fry.

Erie county,	24,000
Bradford county,	82,000
Monroe county,	40,000
Sullivan county,	12,000
Pike county,	8,000
Lackawanna county,	122,000
Carbon county,	181,000
Luzerne county,	130,000
Susquehanna county,	150,000
Wayne county,	70,000
Wyoming county,	70,000
Lehigh county,	34,000
Northampton county,	196,000
Bucks county,	8,000
Total,	1,127,000

Brook Trout, Fingerlings No. 2.

Wayne county,	25,000

Yellow Perch.

Wyoming county,	3,700,000
Carbon county,	2,250,000
Columbia county,	500,000
Lehigh county,	1,200,000
Bradford county,	1,400,000
Monroe county,	1,300,000
Luzerne county,	1,750,000

Lycoming county,	500,000
Susquehanna county,	24,600,000
Schuylkill county,	550,000
Tioga county,	2,700,000
Lackawanna county,	12,650,000
Union county,	600,000
Montour county,	1,750,000
Snyder county,	450,000
Northumberland county,	1,550,000
Wayne county,	22,900,000
Total,	80,350,000

Yellow Perch, Fingerlings No. 2.

Wayne county,	6,000

Small Mouth Black Bass, Advanced Fry.

Carbon county,	32,000
Monroe county,	26,000
Lebanon county,	7,000
Wayne county,	52,000
Lackawanna county,	4,000
Northampton county,	6,000
Susquehanna county,	15,000
Luzerne county,	33,000
Montour county,	7,000
Wyoming county,	42,000
Lehigh county,	4,000
Berks county,	8,000
Bradford county,	11,000
Pike county,	17,000
Total,	264,000

Lake Trout, Advanced Fry.

Wayne county,	15,000
Sullivan county,	10,000
Luzerne county,	20,000
Total,	45,000

Wall-Eyed Pike.

Union county,	350,000
Susquehanna county,	2,050,000
Columbia county,	1,250,000
Northumberland county,	375,000
Wyoming county,	550,000
Monroe county,	1,500,000

Luzerne county,	1,500,000
Pike county,	1,250,000
Northampton county,	750,000
Total,	9,575,000

Bullheads and Catfish, Advanced Fry.

Wayne county,	20,000
Susquehanna county,	10,000
Lackawanna county,	9,000
Total,	39,000

Bullheads and Catfish, One Year Old.

Wayne county,	30,000
Wyoming county,	6,000
Susquehanna county,	24,000
Lackawanna county,	5,000
Monroe county,	12,000
Total,	77,000

Rock Bass, Fingerlings No. 1.

Lebanon county,	3,000

Summary.

Pickerel,	127,750,000
Silver Side Salmon,	90,000
Rainbow Trout,	20,000
Tadpoles and Frogs,	388,000
Brook Trout, fry and fingerlings,	1,152,000
Yellow Perch, fry and fingerlings,	80,356,000
Small Mouth Black Bass,	264,000
Lake Trout,	45,000
Wall-eyed Pike,	9,575,000
Bullheads and Catfish,	116,000
Rock Bass,	3,000
Total,	219,759,000

BLACK BASS POND, TORRESDALE HATCHERY, PHILADELPHIA.

TORRESDALE HATCHERY, STATION No. 5.

Report of Jerry R. Berkhous, Superintendent.

Hon. W. E. Meehan:

Sir: I take pleasure in presenting my third annual report as superintendent of the Torresdale Hatchery.

Owing to the fact of the progress of the Department of Fisheries of Pennsylvania, there being a new hatchery located at Conneaut Lake, which was put in operation last fall there was no overplus of white fish and lake herring eggs for the Torresdale Hatchery which acts as an auxilary hatchery for those two varieties of lake fish.

On account of not receiving any overplus eggs from Lake Erie it left the hatchery idle through the winter months so far as hatching was concerned, which was a great disappointment to me.

Yellow Perch.

With the unusually early spring and the water temperature about forty degrees, the yellow perch commenced spawning on April 1st. I gathered on that day three strings of eggs which measured one quart. The following day I gathered six strings which measured threequarts. The small fish continued to spawn for about a week before the large fish started spawning. One day I gathered a hundred and twenty strings of eggs which measured a hundred and seventy-nine quarts. On one occasion the length of a string of eggs which I measured was eleven feet and six inches. The spawning time lasted until April 24th. The eggs were all placed in hatching jars and hatched with very small loss. Following your directions I placed brush all around the perch pond for the fish to deposit their spawn on but I found that the fish all took to the east or sunny side of the pond to deposit their eggs, same as the year before. I also received some yellow perch eggs from the field work done in Wayne county under your supervision. Although they were not quite as good as the eggs taken from the hatchery pond, they were very nice eggs and I succeeded in hatching about 85 per cent. of them. I am very glad to say that there were no applications left unfilled, and furthermore there was a large consignment of yellow perch sent to Lake Erie, also several shipments were sent to Frenchtown and planted in the Delaware.

Chain Pickerel.

The chain pickerel eggs which were received from the field work in Wayne county were in better condition than they were the year before for the reason that a messenger accompanied each shipment and they were not allowed to be left alone for one minute. April 21, I received 250 quarts of pickerel eggs. With the water temperature at 46 de-

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With the unusually early spring and the water temperature about forty degrees, the yellow perch commenced spawning on April 1st. I gathered on that day three strings of eggs which measured one quart. The following day I gathered six strings which measured threequarts. The small fish continued to spawn for about a week before the large fish started spawning. One day I gathered a hundred and twenty strings of eggs which measured a hundred and seventy-nine quarts. On one occasion the length of a string of eggs which I measured was eleven feet and six inches. The spawning time lasted until April 24th. The eggs were all placed in hatching jars and hatched with very small loss. Following your directions I placed brush all around the perch pond for the fish to deposit their spawn on but I found that the fish all took to the east or sunny side of the pond to deposit their eggs, same as the year before. I also received some yellow perch eggs from the field work done in Wayne county under your supervision. Although they were not quite as good as the eggs taken from the hatchery pond, they were very nice eggs and I succeeded in hatching about 85 per cent. of them. I am very glad to say that there were no applications left unfilled, and furthermore there was a large consignment of yellow perch sent to Lake Erie, also several shipments were sent to Frenchtown and planted in the Delaware.

Chain Pickerel.

The chain pickerel eggs which were received from the field work in Wayne county were in better condition than they were the year before for the reason that a messenger accompanied each shipment and they were not allowed to be left alone for one minute. April 21, I received 250 quarts of pickerel eggs. With the water temperature at 46 de-

grees I made my first shipment of pickerel fry May 2. The eggs received the latter part of the spawning season were nearly as good as the first lot received. I hatched the chain pickerel at a loss of about fifteen to twenty per cent.

Pike Perch.

April 12th I received from Philip H. Hartman, Erie, two cases of pike perch eggs which were very poor looking eggs when they arrived here. The weather was warm and they matted together and gave a great deal of trouble. They commenced hatching April 23. With the best care I could give them I succeeded in hatching only from 50 to 60 per cent.

Shad.

The shad is one of the principal fish of this hatchery on account of its being the only hatchery in the State which hatches shad eggs. April 28, I received my first shad spawn. It was sent to the hatchery late in the evening by Mr. George Lacony, one of the gillnet fishermen. Then there was a busy time at the hatchery as I did not want to see any of the shad eggs go to waste. I took what men I could spare from the hatchery and stationed them at various places along the Delaware river, but still I was handicapped. There yet remained some yellow perch, pickerel and pike-perch eggs in the house and I was unable to give my entire attention to the shad work on the river as I should have liked to. As soon as these eggs were hatched there was no time lost in shipping the fry and then the field work of gathering shad spawn was begun in earnest. Men were placed along the river from Gloucester to Trenton and wherever there were any shad eggs heard of which were not being saved there was a man sent to investigate. With the water temperature averaging from 46 to 50 degrees the eggs came in fast and looked very good. The weather was nice and the catch of shad was very large, in fact larger than the previous year. The fishermen all felt encouraged and looked for a better season than they had had in a number of years. The gill-netter averaged from 50 to 80 shad in a drift, in fact the river seemed full of shad. About the middle of April there came heavy rains and the temperature of the water lowered several degrees. The water got muddy and the shad became scarce. The muddy water continued and the shad became scarcer until at last lots of the gillnet fishermen would make a drift and not get a single shad, and if they got ten to twenty shad in one night they were doing well. In the whole there were not more than one-half as many shad caught in the Delaware as there were the year before. The fact that I got a great many more eggs than I did the year before was due to four distinct reasons:

1st: The water became warm earlier in the spring and the shad came into the river to deposit their spawn.

2d: I was better acquainted with the fishermen and their ways of fishing and new better the habits of the shad and the best places to look for their spawn.

3d: The fishermen are beginning to realize the necessity of their helping the Department to propagate shad. Appreciating the unmistakable benefits of the artificial propagation carried on by the State

they take more interest in the work, and many who would take no pains to save eggs before have opened their eyes and are careful to save all the spawn they can get.

On different occasions they have had ripe roe shad, but no ripe male, and have gone two or three miles in an effort to find another fisherman having ripe males so that the eggs could be taken and saved.

4th: About one roe shad out of every ten caught was ripe whereas the year before there was only about one roe shad out of a hundred caught from which eggs could be taken. I made the live car according to your order for the purpose of penning shad to hold until ripe so that the eggs can be taken; but owing to the scarcity of shad the latter part of the season I was unable to secure the adult fish for the car. I have this car stored away and would strongly recommend the continuation of the experiment another year.

Bass.

The bass which I had in the pond were mostly large mouth so I did not make any nests for them but watched them very closely at spawning time and kept the adult fish fed very well, in fact gave them all the live minnows they would eat. On account of the darkness of the water in the pond I could not see the young fish very well, but by continuing to keep the adult fish fed very well I left the young fish in the pond until they were about one inch in length. By this time the various schools of young fish had all gatherd into one large school and were very easily caught by means of a minnow net. Of these I shipped 27,000. I also received 30,000 small mouth fry from field work in Wayne county. These were all shipped out as advanced fry.

Sturgeon.

The experiment with the sturgeon at this station is proving very satisfactory, although there were no young fish hatched. Beside the fourteen medium sized sturgeon I had in the yellow perch pond I succeeded in getting enough from the fishermen to raise the number to about eighty which I have in a large pond at the present time.

I have found that they can be held in a pond successfully and that the female fish will develop and ripen her eggs while penned in a pond. The same is found of the male fish. Out of the eighty fish I only had two or three female fish that had eggs. The male fish seemed to ripen first, and at the time of the spawning of the female I could not find a ripe male. I find the fish to eat well and keep healthy and fat.

Sunfish.

Early in the spring all the adult Lake Erie Blue Gill, and a few Long Ear were placed in the large pond which had been completed the winter before. Owing to the fact that it is a very large pond with a white gravel bottom the fish did very well and in the month of June the upper or shoal part of the pond was one mass of nests. The fish spawned and hatched very successfully, and this fall when the pond was drawn down and the young fish taken out for shipment they averaged about one inch in length. The yellow and common sunfish were reared in the yellow perch pond. They also turned out very

satisfactorily considering they had to fight their way from the adult fish. About half of my output of sunfish was Lake Erie Blue Gills and Long Ears.

Catfish.

Catfish commenced spawning in the early part of June and there were as many as ten schools of fish taken out of the large pond and transferred to the fry pond in one day. This work was continued until the fry pond was full of young fish. Not having another available fry pond the remainder of the young fish were left in the pond with the adult fish. The drawing off the large pond in the fall for the purpose of taking out the young fish I found that a great many had been eaten by the large fish, but still I had enough to fill all applications.

Frogs.

The frogs of this hatchery all consist of the large bullfrog variety. Owing to the fact that they do not spawn until the latter part of June or fore part of July, and the young remain in the tadpole state until the following spring most of the frogs shipped from this station were in the tadpole state. The adult frogs are kept in a pond by means of wire netting and allowed to spawn there, then the spawn is gathered and transferred to other ponds and hatched there. The tadpoles were all shipped from this station in the fall of the year and would average from three to four inches in length.

Goldfish.

Goldfish are raised here principally for the Board of Education and public places. They are generally raised by allowing the fish to spawn on the roots of the water hyacinth and hatch naturally. According to your directions I took some goldfish eggs in the same manner as the brook trout and shad eggs are taken. The experiment proved very successful. With your approval I would like to carry the experiment still further next spring.

Beside my output of goldfish this year I wish to thank Mr. John Fowler through you for about 3,000 young fish which I have in a small fry pond to carry through the winter. I had a total of about 300 tripple tail or fancy Japanese fish which were hatched here in the spring..

Terrapin.

Following out your direction I secured about two dozen red legged terrapin through the superintendent of field work, Mr. Charles H. Nesley. I made a pond for them and watched them very closely, but am sorry to say that the experiment with terrapin was a failure this year as I did not get any young. but would like to continue the work another year as I feel sure that it can be carried on successfully at this hatchery.

Improvements.

The sunfish pond was completed last winter by the House of Correction labor. The size of this pond is about eighty feet wide and two hundred feet long. The large fry pond at the upper end of the grounds has been deepened about one foot and the bottom of the pond graveled which makes it a much more appropriate pond for fry. The work of grading and filling in low places continued through the cold weather, also the cutting of brush. As soon as the spring opened, with your permission I tore up the three-inch intake pipe leading from the yellow perch pond to the pumps and replaced it with a four-inch pipe. The three-inch pipe did not draw sufficient water to run both batteries full capacity, but I have found that the four-inch intake pipe draws plenty of water for the two batteries as they were both running at full capacity this spring for over one month.

At the entrance on Linden Avenue, the extreme upper end of the grounds, I made a fry pond about twenty feet wide and fifty feet long. This pond was used for catfish fry. Opposite the upper end of this pond a concrete dam was built across the creek which runs through the hatchery grounds. From the dam to the pond I laid a four-inch pipe and by means of a valve I can regulate the amount of water running through the frypond and also the sunfish and bass ponds. At time of heavy rain or muddy water in the creek I can shut off the water supply and the water still remains clear in these ponds. I remodeled one of the ponds used for young frogs or tadpoles into a terrapin pond by making the pond about one foot deeper and filling in the upper end to slope to the water edge with fine sand. On account of the cold weather the frost got under the wooden trunk leading from the goldfish pond to the catfish pond causing a very bad leak. I tore out the wooden trunk and replaced it with a four-inch iron pipe with a valve at the centre. From this pipe I ran an inch pipe into each of the fry ponds between the goldfish and catfish ponds. By this method there is no possible chance for a leak through the outlet. There were three new concrete fry ponds built east of the hatching house which are each fourteen feet wide by thirty feet long. These ponds will be used mostly for young goldfish on account of having put in concrete bottoms in order to hold water, the soil being very sandy.

On finishing the fry ponds I started on the hatching house, first by tearing out the old wooden floor which was in very bad shape and then putting a concrete wall under the building which stood well up on stone piers. I dug out for the wall and put it deep enough so it would be out of danger of the frost getting under it. After the wall was completed I propped up the two batteries and put in a heavy concrete floor which is twenty-two inches lower than the old floor. After the concrete floor had hardened thoroughly I lowered the batteries to the floor. By so doing it gives room for one more trough on top of each battery, which would increase the capacity of the hatchery about eighty-four jars. From the overflow of the house I ran a sewer direct to the river which carries off all the waste water from the house. This makes the hatching house a great deal warmer and drier. I divided the Downing battery trough into two parts. By dividing the troughs two kinds of eggs can be hatched at one time on the same battery without the young fish getting mixed to-

gether. The large pond which was used first for bass I drew off and gave a thorough cleaning out. I found that mud and decayed leaves at the lower end had accumulated in places to depth of two feet. The dirt was used for leveling and filling in around the banks of the pond and afterward seeded with lawn grass seed and rolled level. The old wooden dam between the yellow perch pond and what is known as the cove pond I tore out and replaced with a concrete wall eighty-five feet in length, eight feet high and eighteen inches thick. This was a very difficult job on account of the water running in all the time. After the wall was finished I found that the cove pond contained some very good springs, and strongly recommend that you carry out your plans of giving me brook trout to stock this pond. I feel satisfied that they would thrive in said pond. By your direction Mr. Henry Clay, Director of Public Safety, sent a gang of House of Correction laborers here early in the spring for the purpose of making a macadamized road from the State road to the hatchery grounds. The stone was furnished from the House of Correction quarry with the exception of the very fine stone for the top dressing. The stone was loaded on a flat boat at the quarry and towed to the hatchery by means of the hatchery launch.

Through the interest that Mr. Henry F. Walton takes in the hatchery he secured the city surveyors to survey the road and make a blue print free of charge. The road connects with the State road with two very graceful approaches. Mr. Frank Vandermeeder, the guard in charge of the work, deserves much credit.

There has been a nice row of young maple trees planted the full length of the new road. On account of this road the concrete arched sluice between ponds number one and two had to be extended to the full width of the road, giving it a much nicer appearance. I deepened the large gold fish pond at the upper end about one and a half feet, as I found that in case the pump was not running nearly every day the upper end of the pond would become dry, having been dug on too much of a slope, so when the young goldfish went up in the shoal water to feed and sun themselves the water would settle away from them and they would die, but by deepening the pond this trouble is overcome. A store house eighteen by twenty feet has been built for the purpose of storing nets and cans. I also built a slip or boat landing in front of the hatchery nearly out to the low water mark. I built it out of the old float which was in front of the hatchery by sawing the float in half. It reaches nearly out to the low water mark and small boats can land except at extremely low tide. It will have to be taken in during the winter on account of it not being heavy enough to stand the ice in the river. Although there are many improvements to be made at the Torresdale Hatchery I am glad to say that I think the hatchery to be in fairly good condition.

I am glad to again have the opportunity of thanking you for your suggestions and courtesies. The output of fish from December 1, 1907, to November 30, 1908, is herewith attached.

Respectfully,
J. R. BERKHOUS,
Superintendent.

Pike Perch Fry.

Adams county,	96,726
Bedford county,	579, 996
Berks county,	96,666
Blair county,	1,836,654
Cumberland county	96,666
Dauphin county,	579,996
Huntingdon county,	483,330
Lancaster county	96,666
Lebanon county,	386,664
Mifflin county,	679,996
Perry county,	96,666
York county,	773,328
Planted in the Delaware River by Department of Fisheries,	2,896,646
Total,	8,700,000

Small Mouth Bass, Advanced Fry.

Berks county,	4,000
Chester county,	9,000
Lancaster county,	9,000
Lebanon county,	6,500
Montgomery county,	1,500
Total,	30,000

Large Mouth Bass, Fingerlings.

Berks county,	4,000
Bucks county,	8,000
Delaware county,	1,500
Planted in Delaware River by the Department,	10,000
Total,	23,500

Goldfish, Fingerlings.

Erie Hatchery,	100
Philadelphia Police and Fire Department,	900
Philadelphia Electrical Bureau,	400
Philadelphia Charitable Homes and Hospitals,	200
Philadelphia Schools,	1,700
York Schools,	600
Total,	3,900

Shad Fry.

Planted by the New Jersey Fish Commission in the Delaware River,	9,676,000

Yellow Perch Fry.

Adams county,	125,000
Bedford county,	1,625,000
Berks county,	2,875,000
Blair county,	2,375,000
Bucks county,	4,375,000
Cambria county,	500,000
Chester county,	5,000,000
Cumberland county,	3,125,000
Dauphin county,	375,000
Delaware county,	500,000
Franklin county,	1,000,000
Fulton county,	375,000
Huntingdon county,	2,375,000
Lancaster county,	625,000
Lebanon county,	625,000
Lehigh county,	125,000
Mifflin county,	150,000
Montgomery county,	2,000,000
Philadelphia county,	750,000
York county,	1,125,000
Planted by New Jersey Fish Commission in Delaware River,	10,125,000
Planted by the Department in Lake Erie,	5,000,000
Planted by Department in Delaware River,	1,125,000
Total,	46,275,000

Chain Pickerel Fry.

Bedford county,	528,480
Berks county,	3,523,200
Blair county,	5,108,640
Bucks county,	2,113,920
Chester county,	3,523,200
Cumberland county,	176,160
Dauphin county,	176,160
Franklin county,	704,640
Fulton county,	880,800
Huntingdon county,	7,574,880
Juniata county,	176,160
Lancaster county,	1,409,280
Lebanon county,	5,637,120
Mifflin county,	704,640
Montgomery county,	880,800
Perry county,	176,160
York county,	1,056,960
Planted in Delaware River by the Department,	9,688,800
Total,	44,040,000

Tadpoles.

Berks county,	12,500
Bucks county,	4,500
Chester county,	4,000
Delaware county,	1,000
Franklin county,	7,000
Lancaster county,	12,500
Montgomery county,	8,000
York county,	65,000
Total,	114,500

Catfish Fingerlings.

Adams county,	2,000
Berks county,	32,000
Bucks county,	14,000
Chester county,	12,000
Cumberland county,	4,000
Delaware county,	4,000
Juniata county,	2,000
Lancaster county,	4,000
Lebanon county,	10,000
Mifflin county,	4,000
Montgomery county,	2,000
Philadelphia county,	31,000
Schuylkill county,	2,000
York county,	12,000
Bellefonte Hatchery,	500
Corry Hatchery,	1,500
Total,	138,000

Sunfish Fingerlings.

Berks county,	35,500
Bucks county,	25,500
Chester county,	22,500
Cumberland county,	22,000
Dauphin county,	15,500
Delaware county,	4,500
Huntingdon county,	1,000
Lancaster county,	5,500
Lebanon county,	11,000
Lehigh county,	6,000
Mifflin county,	3,000
Montgomery county,	12,000
Northumberland county,	12,500
Perry county,	2,000
Philadelphia county,	1,500
Schuylkill county,	2,000
York county,	9,000
Total,	191,000

Summary.

Pike Perch Fry,	8,700,000
Small Mouth Bass, Advanced Fry,	30,000
Large Mouth Bass, Fingerlings,	23,500
Goldfish, Fingerlings,	3,900
Shad Fry,	9,676,000
Yellow Perch Fry,	46,275,000
Chain Pickerel Fry,	44,040,000
Tadpoles,	114,500
Catfish Fingerlings,	138,000
Sunfish Fingerlings,	191,000
Total,	109,191,900

ERIE AUXILIARY HATCHERY, STATION NO. 6.

Report of A. G. Buller, Superintendent.

Hon. W. E. Meehan:

Sir:—I beg to submit the following as my report from December 1, 1907, to November 30, 1908:

This station received from the field at Dunkirk, N. Y., 232,000 lake trout eggs last December and 500,000 eyed eggs from the United States Bureau of Fisheries, Northville Station, Michigan, in January. March 19 the eggs began to hatch. On and by the latter part of April all the fry were planted in Lake Erie. The battery system was not installed at this time, and as I was anxious to have the output of fish from this station increased I used the trout trays for hatching yellow perch and chain pickerel eggs. This means a lot of work as it was necessary to feather the eggs on the trays almost continuously. There were 25,820,000 yellow perch and pickerel eggs hatched in this way. Of this number 5,100,000 eggs were collected from the perch pond on the grounds, the remainder were received from the field force stationed in Wayne county. Heretofore yellow perch and pickerel eggs have always been carried by our men in cans with water, but this year part were shipped on trays in cases, and the latter arrived in better condition than those shipped by the former method.

During the spring a large number of adult yellow perch were brought from the field force in Lake Erie for our brood ponds so that a large take of eggs may be looked for next spring. Shipping began on the 11th of May, some days making as many as four shipments. It was pleasing to note the interest shown in the work by the people of Union City. Many who had not before visited the hatchery expressed their astonishment at the amount of work that was being done in such a short time.

Black bass work began May 27th and is regarded by all hands on this station as intensely interesting. Earlier in the spring we had the misfortune to lose sixty-four breeders from some unknown cause. When the pond was frozen over last autumn the fish were fat and healthy and even when the ice disappeared and found a few dead the remainder seemed to be in good condition, but 34 died on the 10th of April and 10 on the 17th. Owing to this loss there were but few fish remaining. When the bass were discovered working on the nests they were examined daily. The first eggs were found June 5th on two nests. The temperature of the water was 55 degrees. Four more nests with eggs were found on the 7th, the water temperature then being 58 degrees. The eggs on the first two nests hatched on the 10th or in five days with a temperature of 60 degrees increasing to 62 degrees. The remaining four nests hatched by the 14th.

We began taking the advanced fry from the nests on the 15th and the last were removed on the 22d. Some of the fish were placed in the fry ponds and about 11,700 were put in the troughs in the hatchery with plenty of Chara. I held them in this way for one week and at time of shipment they were healthy and lively. I feel that this is the better plan, to plant, at least part of the fish, in the advanced fry state on account of the cannibalism which results to retaining them longer. Eleven thousand two hundred and fifty fingerlings No. 1 were planted in the month of July. The fry ponds were cleaned in June and it was thought that every fish had been removed, but after having placed a few bass fry in one of the ponds on the 20th I discovered therein a few minnows and did not consider it safe to place any more in the pond, fearing if I did they would be lost, but to my surprise and pleasure on July 30th when we drew off the pond we found 700 fine bass two inches long. These by your orders are to be held until next spring. They are at this time about four inches long and doing well. During the summer 128 adult black bass were received from the field force at Erie which were exceptionally fine. The latter part of October seventy-three of this number were sent to the Torresdale Hatchery for breeding purposes. While these fish were being removed we caught thirty-five young bass that averaged four and one-half inches in length.

The sunfish began cleaning their nests May 27th and on July 30th we removed about 70,000 young sunfish and calico bass and placed them in one of the fry ponds, but there was a large number of fry remaining. The spawning period of the sunfish at this station extends over four months. When we drew the pond in October to remove the remainder of the fry for distribution we discovered a large number of the little fellows not over two weeks old. Altogether we distributed 204,000 fingerlings No. 1.

The distribution of sunfish, rock and calico bass was made about the same time and the total was much larger than in 1907.

Realizing the necessity of a battery house at this station, but owing to the scarcity of funds you instructed me to go to Conneaut Lake Hatchery, copy the construction of that house as nearly as possible and build a similar structure myself at this station. I did so and I have a neat building completed, 32x60 feet with a three course tile foundation. The height of the building from the top of the foundation to the square is eight feet. There are seventeen windows, also a cement floor. The battery is made of cypress, six troughs higl and twenty-eight feet long with a capacity of 290 jars. The battery is so placed that we will be able at any time to install two other similar batteries. With the exception of laying the wall and chimney the entire work was done by the hatchery force. The house is supplied by water from the main dam. The Meehan hatching jar has been installed in this hatchery. I consider it a great improvement over the McDonald or Dowing jar. I think it has the proper construction for a hatchery jar and it has proven to be most successful and convenient.

There are now 13,068,000 white fish eggs and 9,680,000 lake herring eggs in this station. Owing to the shortage of water supplying the battery at the Conneaut Lake Hatchery you directed the eggs at that place to be sent to this station to be hatched. There was

also sufficient jars sent to fill the battery. I am sorry to say that the eggs so far received have been of a poor quality.

On November 26, 1908, I received 3,000,000 lake trout eggs from the United States Bureau of Fisheries, Northville Station, Mich. The distribution of these eggs will be given in my next report.

The improvements on the grounds during the year are as follows: The fry ponds which were under construction at the end of the year 1907 were completed, the yellow perch pond was enlarged by removing bank of two smaller ponds adjoining. This adds to the appearance of the grounds and also covers the want of more space for handling perch. We have practically finished the section of the grounds where the ponds and hatching buildings are located. We graded the grounds, graveled the driveways, sodded the banks, also placed steps from the level to tops of banks, and planted about fifty pine trees which are apparently growing.

In order to make the reservoir more secure we rebuilt the splash with concrete. The floor of the barn was in bad condition and the stable was very cold for the horses, so we removed the wooden floor and put in concrete. We rearranged the partitions and now have the barn comfortable. We improved the appearance of the dwelling house by removing an unsightly porch that was of no use whatever. We were unfortunate in having the lightning strike the chimney, and yet were fortunate as there was little damage done, the Insurance Company rebuilding the damaged chimney. As yet we have not utilized the southwestern part of the grounds for ponds. We have been cutting hay from this place, but at time it was almost impossible to reach this part with the team on account of the swampy condition of the ground. I am now building a road to this point.

For a time I was worried about the supply of water owing to the drought which was general. There was a very small stream of water flowing into the bass pond, but I am thankful to say that we have had no loss of fish.

The reservoir that supplies Union City with water is located above the hatchery grounds and we depend on the overflow from this reservoir for several of the ponds. The officials of Union City have been working hard during the summer to increase the water supply and have been successful in adding several new springs to the reservoir. Since this has been accomplished our supply of water has been greatly increased.

Hoping this report will meet with your approval, I am,

Respectfully,
A. G. BULLER,
Superintendent.

FISH, ETC., DISTRIBUTED FROM DECEMBER 1, 1907, TO NOVEMBER 30, 1908.

Tadpoles.

Butler county,	4,000
Warren county,	13,000
Total,	17,000

Calico Bass, Fingerlings No. 1.

Clearfield county,	3,000
Erie county,	4,000
Lancaster county,	1,000
Montour county,	2,000
Wyoming county,	2,000
Warren county,	2,000
Total,	14,000

Rock Bass, Fingerlings No. 1.

Indiana county,	6,000
Lancaster county,	1,000
Venango county,	6,000
Total,	13,000

Blue Gill and Long Ear Sunfish, Fingerlings No. 1.

Clearfield county,	27,000
Columbia county,	10,000
Clarion county,	15,000
Erie county,	52,000
Jefferson county,	10,000
Lancaster county,	18,000
Lycoming county,	20,000
Montour county,	16,000
Venango county,	4,000
Warren county,	16,000
Wyoming county,	10,000
Westmoreland county,	6,000
Total,	204,000

Yellow Perch.

Crawford county,	450,000
Clarion county,	720,000
Clearfield county,	900,000
Clinton county,	2,340,000
Erie county,	4,170,000
Lycoming county,	1,700,000
McKean county,	1,530,000
Snyder county,	1,620,000
Union county,	450,000
Warren county,	2,025,000
Total,	15,905,000

Pickerel.

Crawford county,	225,000
Clarion county,	450,000
Clearfield county,	1,260,000
Erie county,	4,965,000
Northumberland county,	2,205,000
Warren county,	810,000
Total,	9,915,000

Lake Trout, Advanced Fry.

Planted in Lake Erie,	598,790

Black Bass, Advanced Fry.

Erie county,	7,500
Warren county,	4,200
Total,	11,700

Small Mouth Black Bass, Adults.

Montgomery county,	73

Small Mouth Black Bass, Fingerlings No. 1.

Crawford county,	2,500
Clearfield county,	1,250
Erie county,	3,000
Lycoming county,	5,000
Union county,	500
Total,	12,250

White Fish Eggs.

From Port Clinton,	10,944,000
From Conneaut Lake,	2,124,000
Total,	13,068,000

Lake Herring Eggs.

Received from December 1, 1907, to December 1, 1908,	9,280,000

Lake Trout Eggs.

From Dunkirk, N. Y., (green eggs,)	232,000
From U. S. Bureau of Fisheries, Northville, Mich., eyed eggs,	500,000
From U. S. Bureau of Fisheries, Northville, Mich.,	3,000,000
Total,	3,732,000
Sent to Wayne County (eyed eggs),	50,000

Yellow Perch Eggs.

Gathered at hatchery,	5,100,000
Received from Wayne County,	11,545,000
Total,	16,645,000

Pickerel Eggs.

Received from Wayne County,	10,115,000

Summary.

Small Mouth Black Bass, adults,	73
Small Mouth Black Bass, Fingerlings No. 1,	12,250
Small Mouth Black Bass, advanced fry,	11,700
Lake Trout, advanced fry,	598,790
Pickerel,	9,915,000
Yellow Perch,	15,905,000
Sunfish, Blue Gill and Long Ear, fingerlings No. 1,	204,000
Rock Bass, fingerlings No. 1,	13,000
Calico Bass, fingerlings No. 1,	14,000
Tadpoles,	17,000
Total,	26,690,813

CRAWFORD HATCHERY, STATION NO. 7.

Report of W. H. Safford, Superintendent.

Hon. W. E. Meehan, Commissioner of Fisheries, Harrisburg, Pa.:

Sir: The folowing is the report of the operations at the Crawford County Hatchery for the year beginning December 1, 1907, and ending November 30, 1908.

This year has been a very successful one for the Crawford hatchery. The most noticeable thing is the increase in the hatch of fish this year over that of last. The total hatch of the year beginning December 1, 1906, and ending November 30, 1907, was 162,750, while that of this year is 51,554,500. This great increase is due to your forethought in erecting a battery at this station.

The hatchery being located in that section of the state where warm water fishes abound, (by that I mean there are no trout streams in the near vicinity) makes our increase over that of last year doubly important. By having a battery here we are also able to assist in the restoration of the lake fishes, such as the white fish, lake herring and wall-eyed pike. Our hatch of the first two named species last year were 9,500,000 white fish, 1,500,000 herring and 14,350,000 wall-eyed pike.

Last year being the first year of the battery it was not entirely completed until very late, so we were not in a position to take any of the eggs in the first part of the season. The result was the quality of the eggs was not as good as they might have been, and the per cent. of our hatch was much smaller. As I stated before the work of the station is chiefly that of propagation of warm water fishes, which brings us into pond culture almost entirely. While the number of fish propagated in this manner may not run into millions, it does not mean that it requires less labor. On the other hand it means more work. For instance, in hatching and rearing to advanced fry and fingerlings 50,000 small mouth bass, it would take more labor and more money than it would to produce 50,000,000 yellow perch, and to the Department one is as valuable as the other.

Again pond culture is very uncertain, the eggs from the fish not being taken artificially like the white fish, herring and various other species, but left for nature to develop as she sees fit. Besides it makes a wonderful difference at a pond cultural station as to the weather conditions at the spawning periods. In bass culture from the 15th of May until the first of July, the weather can make or destroy our output for that year. If we have an early spring and the weather becomes warm and settled by the 15th of May, which is practically the beginning of the small mouth bass spawning season, and continues through, we have no trouble with our work. If, on the other hand, the weather is changeable, we are liable to lose 40 to 60 per cent. of our hatch for the year with no power to prevent. So one can see that no standard of production can be given to a pond cultural station.

In my experience no two years are alike. Last year in less than 24 hours we lost 75,000 eggs and fry of the black bass by the water dropping from 66 to 42 degrees. This year the fish were very backward and cast a small amount of eggs, still our output was 4,650 more than last year. With favorable conditions I hope to double our output next year over that of this.

In pond extension we have done very well. With our own regular men and no outside help we have built two ponds, one 160 by 70, and one 80 by 80. A great amount of work has been done toward beautifying the grounds, the banks of all ponds being completed, seven in number. A large new intake sluice way has been partially completed.

The upper northeast corner of the grounds have been graded and filled in to a depth of from two to three feet, partly filling up an unsightly place. The main driveway leading to the public road has been graveled nearly its entire length. A swale in the driveway has been filled and raised to a height of about four feet. One-third of the grounds has been enclosed by a substantial wire fence.

The battery equipment has been repaired and painted and is in first-class condition. A fine flag staff 60 feet in height has been erected. The water main furnishing the supply for the hatchery gave us considerable trouble in the spring and summer by the cement joints giving way. This has been taken up and the broken joints repaired by leading.

Numerous smaller things, such as lining the horse stable, and building a small room in the hatchery building for the convenience of the men have been done.

Early in September the Conneaut Lake Ice Company constructed a new spillway at the mouth of the outlet lowering the lake level 20 inches if they want to. If this is not handled right, it might during the fall or spring, suddenly let out an enormous lot of water. This compelled me to rebuild our large dam to withstand this if necessary. It took quite a little time and labor to do this. I also straightened about 60 feet of banks of the outlet below the dam in order to assist in carrying off the water.

The appearance of the station on a whole has been greatly improved. On your last official visit to this station you staked out a new bass pond of about one and one-half acres in area, on which work has already been started. This will be continued throughout the winter as fast as the weather will permit. In our pond culture work it is gratifying to me to bring to your notice that each species of fish propagated at this station shows an increase over that of last year. Among the important fishes held at this station is the bluegill sunfish. The hatch of this species last year was 93,000, while this year it is 119,000, showing an increase of 26,000. Considering the size of the pond and the number of adult fish this is very pleasing to me.

During my attendance at the American Fisheries Society at Washington, D. C., in conversation with several of the Superintendents of the different United States Bureau of Fisheries stations, I found that they had considerable trouble in handling the fry of this fish, especially when seining for the fry in preparing their shipments. It was stated to me by these gentlemen that they seemed very tender and easily injured. I find it quite the reverse with ours. On the contrary, I consider them quite hardy. Our fish are always seined and

placed in retaining boxes one day prior to shipping, so that in case any should be injured they would show it before being placed in cans and shipped to the applicants. Out of 119,000 shipped, less than 25 were removed from the retaining boxes as being injured or dead.

As I stated before, at the opening of the bass spawning period this year, the indications were for a very small hatch. Out of 40 pairs of fish only 15 nests were cleaned up, and of these 12 had eggs on and two made their nests outside on the clay bottom. Our per cent. of hatch was way beyond that of last year, else our output for the year would have been much less. As it was we increased it a little.

This season was our first with yellow perch. The number of eggs gathered from fish in our own pond were 3,500,000, which I think very good, taken from the fact that the fish had only been in the pond one winter. The percentage of natural impregnation of this species of fish is almost 100 per cent., and as the fry are very easy to handle, a large output is always assured.

The great drought that prevailed in this section of the state during the past summer and fall almost brought our frog culture to a stand still. It especially affected the yearlings and two year olds that I was rearing. In fact during August and September it was so dry I was unable to keep very much water in the frog pond, as the spring run that furnishes the water for the ponds became entirely dry. This was something that was never known to have occurred before. As there was very little water in the ponds it was necessary to watch them very closely. It brought to my attention an instinct that frogs were gifted with what I did not know of before. The water got so low in pond No. 2 where the yearlings were that it was necessary to move them in pond No. 1, where there was more water.

On going to the pond with nets and tubs to move them, I was unable to find but very few. I examined the screen around the pond very closely, but found no holes, neither did I see any dead ones. The ponds as constructed are entirely natural both sides and bottom. The grass had become very heavy and in some places hung down fourteen or fifteen inches long over the sides of the banks. In raising up a small bunch of this grass, I saw a hole in the bank about the size of a half dollar. On examining the hole I found it contained four or five yearling frogs. They were as sleek and moist as could be. We then proceeded to examine the entire pond. We found hole after hole and every crevice that was large enough for a frog to crawl into was filled. So that of 500 counted frog tad-poles or frogs with the tail still on, we counted and moved into the upper pond 400 without tails, showing no unusual loss aside from the natural death rate. Whether this is a natural instinct of the frogs where they are confined and unable to get to water, or whether the lack of water drove them to it, I am unable to say. I mean to watch this and determine if this is a common occurrence with them.

Needless to say I was greatly surprised to find them where I did. The species propagated here is the common green frog of Pennsylvania.

Having no regular catfish pond completed at this station, last year the few adult catfish we have we carried in our sunfish pond. These produced a small number of fry sufficient to fill the number of applications on file at this station.

At the present time our catfish pond is finished and with the new

stock of adults to be gathered next spring we will be able to make a considerable addition to our output.

In closing my report for the year of 1908 I wish to say the entire equipment is in first class shape and prospects are good for a successful year in 1909.

Below you will find a tabulated statement of all counties receiving fish from this station.

I am your obedient servant,

W. H. SAFFORD,
Superintendent.

Output of Fish, etc., from December 1, 1907 to November 30, 1908.

Bass.

County.	No. of Fish.
Venango,	4,500
Crawford (including Conneaut Lake),	13,200
Green,	1,250
Mercer,	9,000
Butler,	2,000
Beaver,	2,000
Lawrence,	1,000
Westmoreland,	2,250
Fayette,	300
Allegheny,	500
Lackawanna,	1,000
Total,	37,000

Wall Eyed Pike.

Venango,	650,000
Butler,	350,000
Lawrence,	450,000
Crawford (including Conneaut Lake),	4,450,000
Clarion,	400,00
Mercer,	300,000
Armstrong,	250,000
Indiana,	350,000
Somerset,	200,000
Erie (Lake Erie),	6,950,000
Total,	14,350,000

Yellow Perch.

Mercer,	1,050,000
Jefferson,	150,000
Beaver,	150,000
Somerset,	100,000

County.	No. of Fish.
Venango,	350,000
Clarion,	100,000
Crawford (including Conneaut Lake),	4,600,000
Greene,	50,000
Butler,	150,000
Lawrence,	150,000
Westmoreland,	450,000
Indiana,	400,000
Armstrong,	150,000
Erie (Lake Erie),	6,150,000
Total,	14,000,000

Sun Fish.

Mercer,	16,000
Butler,	1,500
Beaver,	1,500
Greene,	6,000
Lancaster,	4,500
Crawford (including Conneaut Lake),	79,500
Total,	119,000

Pickerel.

Butler,	100,000
Washington,	350,000
Fayette,	50,000
Beaver,	100,000
Venango,	150,000
Jefferson,	50,000
Greene,	50,000
Allegheny,	50,000
Mercer,	400,000
Armstrong,	250,000
Clarion,	450,000
Forest,	50,000
Lawrence,	50,000
Crawford (including Conneaut Lake),	3,800,000
Erie (Lake Erie),	6,100,000
Total,	12,000,000

Frogs.

Mercer,	10,000
Armstrong,	7,000
Indiana,	7,000
Greene,	2,000
Crawford.	21,000
Total,	47,000

Cat Fish.

County.	No. of Fish.
Mercer,	500
Greene,	250
Crawford,	750
Total,	1,500

No. of Fish hatched year ending November 30th, 1908.

Walleyed Pike,	14,350,000
Yelow Perch,	14,000,000
Pickerel,	12,000,000
White Fish,	9,500,000
Lake Herring,	15,000,000
Sun Fish,	119,000
Small Mouth Bass,	37,000
Cat Fish,	1,500
Frogs,	47,000
Grand total,	51,554,500

REPORT OF THE SPRUCE CREEK HATCHERY, STATION No. 8.

William F. Haas, Supt.

Hon W. E. Meehan, Commissioner of Fisheries, Harrisburg, Pa.:

Sir: The following is my report for the year beginning December 1, 1907, ending November 30, 1908:

Although I lost several thousand trout on account of two floods in March and May, I took 650,000 eggs from my own fish and received 250,000 eggs from Weissport, making 900,000 eggs in all. Considering the heavy loss of brood fish which I sustained the take of eggs was very gratifying being a little more than four times what I took in 1907.

The fish were unusually late in beginning to spawn and on the first of December there were still quite a number unripe. At no one time was there a large number of ripe fish. The greatest number of eggs taken in any one day was 60,000. It has been my policy to train my assistants in egg taking and it was fortunate that I did so as it enabled me when you were advised that we could have the surplus eggs at Weissport to go thither myself and leave the spawn taking to my men.

They did their work well and as the eggs did not come fast they were able to take their time to the work and fertilize them properly and care for the stripped fish afterwards.

The subterranean algae which bothered me greatly last winter and the winter before, seems to have entirely disappeared though I look for a little later in the season when the unlocated surface spring begins to work. My eggs are therefore doing well and I shall have at least as many fish in the spring as I had last year.

I retained 70,000 fish from my last winter's hatch for stock, but lost the greater part of them during the floods of March and May. Those that I saved did remarkably well and I lost very few during the summer months which is the danger period for young fish, and I now have 14,000 yearlings sorted into four sizes in my ponds, and these will come into breeding next fall.

In addition I have 3,000 two year olds and 1,000 three year olds. I am glad to say that if the two year olds and three year olds I have less than 300 males, so that with the fish now in the retaining ponds I should have a good supply of eggs next winter

I was again unfortunate this year with my lake trout. The March flood carried away almost my entire stock of two year olds so that I have not to-day more than 50 left, and the storm also left me only abount 75 three year olds.

I received 3,000 fingerling lake trout in the spring from the Wayne hatchery and of these I have a good 2,000. A very curious feature about the old lake trout on this hatchery is their remarkably slow

growth. My three year old fish do not average a foot in length and my two year olds scarcely average seven inches. The fingerlings for many months hardly seemed to grow at all. They refused to take their food readily, but late in the fall they suddenly commenced to eat and since then I had no trouble, and they have grown with great rapidity and some of the fish which are now yearlings are nearly as large as the average of my two year olds. I think one reason for the slow growth of the older fish is that they were always kept in small ponds and where the water was not very deep.

My fingerlings while they are in a small pond are in deep water, and I believe that the only way is to have the lake trout make a normal growth is to keep them in very large and deep ponds. Believing this I asked for and secured your permission to build a very large trout pond next summer for this species and to locate it where we have started the bass pond. It will be nearly 400 feet in length, almost 200 feet in width at the lower end, and at the kettle a depth of about seven feet, and at the upper end of three.

This pond will also do for four year old female brook trout. The construction of this pond will not interfere with the construction of a large bass pond as there is plenty of room on the property.

Anticipating the needs of the stock trout, I built seven new trout ponds, all of large size. These are completed and the seventh only needs to have the bottom graveled before turning the water in. Of the seven ponds one is 125 feet long and 30 feet wide and contains four feet of water. The second is 115 feet long, 22 feet wide and has four feet of water. The third, fourth and fifth ponds are all 36 feet long, 22 feet wide and three feet of water and the seventh is 42 feet long, 22 feet wide and three feet of water. The seven ponds will hold all the fish now in the nine yearling ponds, and also all the two and three year old fish with probably a pond to spare.

Ever since the hatchery has been in operation it has been periodically visited by floods. As far as I can learn previous to the acquisition of the property there had been no serious high water for years, but within the last three or four years the forests on the hills bordering the valleys which enter the Spruce Creek Valley have been entirely stripped with the result that every time a heavy rain came Spruce Creek overflowed its banks.

The first serious flood this year occurred in March. At that time the water overflowed the banks about 300 feet below the upper end and flooded back over all but two ponds. It poured into the hatching house where there was 22 inches of water flooding all the bottom tier of troughs, but not touching the second. Fortunately, there were no fish in the lower tier. It was this flood which took most of my fish. The high water lasted from four o'clock in the morning until nearly noon. What fish did not escape were all mixed up as to size. Fingerlings, three year olds and two year olds were all mixed together, and it took us nearly a month to sort them out.

The second flood was the result of a cloud burst which came on the evening of May 29th. The storm itself did not last over half an hour, but in that time the water in the creek rose nearly six feet. It came over the road on the left bank of the creek and flooded the stable so that I was compelled to take the horse out. It entered the hatchery grounds at the upper end to a depth of nearly a foot, and came within about four inches of entering the first one of the large ponds and did flood the lower ponds to a depth of about four inches.

I immediately notified you and you ordered me to drop all other work at once and begin the construction of a dyke, taking the earth from the ground below the hatching house and the excavation thus left to be the site of a bass pond. I began work on the 10th of June, and spent the greater part of two months in building an embankment of nearly 1,000 feet long, 10 feet at the base, an average of five feet high and five feet at the top. The dyke sets back from the creek about 20 feet so that hereafter in case of flood there will be a space of from 70 to 75 feet for the water to flow and the dyke itself is a foot and a half higher at the lowest point than the highest flood that has ever visited the grounds. I think therefore we may consider that in the future the ponds are safe.

Now that we have got rid of the algae I consider that we have the finest kind of water for trout breeding. I am not troubled in the slightest degree with gill diseases and I have a very small percentage of short gill cover fish. Diseases of any kind are very rare on my hatchery.

Last winter I was advised that you had made arrangements with Hon. Francis J. O'Connor, Judge of the Court of Cambria county, to utilize some ponds which he had on his property near Johnstown as auxiliary trout ponds and in conformity with orders I took thither in the spring about 15,000 fingerling trout and instructed the men in charge how to take care of them. The fish are doing fairly well and should give a good supply of eggs next fall.

My bass work was a complete failure. My breeding pond is not well adapted for the work. It is in the first place very small in area and has a thick muddy bottom. As a consequence algae collects in the spring in such great quantities that it is impossible to keep it down. Sulphate of copper in quantities to kill the algae would I am afraid also kill the bass and the growth is beyond hand work. Because of the algae which is especially thick in the shoal parts the bass refused to use the nests which were prepared for them. They did so the previous year and built nests in the clear mud in the deepest part of the pond.

This year they built their nests also in the mud at the lower end, simply scooping out the soft mud and laying their eggs on the harder portions. They began spawning about the 25th of May, and before any of the eggs were hatched there came a second cloud burst which I have already spoken of. A great quantity of muddy water poured into the pond and completely smothered the eggs. For nearly a week the ponds continued in this condition. Every egg was smothered and I had no young bass.

I feel that I can do nothing with bass on this station until we have a pond properly constructed and from which we can keep muddy water. The pond in which I now have the bass is only fitted for the propagation of catfish. I have a few catfish in a small pond and some of them nested producing 1,500 fish. I also have a few sunfish in another pond and these gave me 11,900 fish. Unfortunately, I have not the best species, they being only long ears and commons, and I would recommend that my stock be replaced next spring by the blue gill.

I received from the United States Government on your orders a number of fresh water pearl mussels. There were three species. One especially adapted for trout streams and which is said to be the best for pearls. The other two species came from the Mississippi Valley.

and the shells of both are valuable for making pearl buttons, and one species, it is said, yields pearls freely. They arrived while I was ill, and they were placed for the winter in the bass pond. I found they were alive in the spring.

I received from the United States Government a letter describing the method of hatching and it appears that it is done by having the spawn attached to the gills of certain fishes, especially the rock bass. Not having any rock bass or any species of fish especially adapted to this work, with the exception of the black bass, I did not disturb the mussels, but allowed them to remain in the bass pond in the hope that they would propagate there naturally. With what result I cannot tell until next spring when the pond is drawn down.

I distributed over 750,000 trout last spring from fish hatched from my own eggs and from eggs received from Port Allegany and Penn Forest. My own eggs and the Port Allegany eggs did well, but the Penn Forest eggs were poor. There was a very large proportion of ringers among them, and also a large number of false eggs. I understand that many of the Penn Forest eggs had not been stripped the previous year, and this perhaps may account for the large number of false eggs.

My fish for distribution were strong and healthy and gave general satisfaction to the applicants. I had all my fish distributed by the middle of May and had there been any necessity for it could have finished even earlier.

This autumn I cleaned the ponds of fish of the Spruce Creek Club, a private organization located about eight miles from this hatchery. I got 123 fish and from them about 20,000 eggs. Under the agreement by which these fish were taken I am to return 25 per cent. of the hatch to the Spruce Creek Club. This will leave for the State about 12,000 fish. The trout were fine specimens that had come originally from the Cheat River, Virginia, and as the young fish are very fine and strong I shall keep them for breeding purposes. The mature fish taken are to be returned in the spring to the Club.

The work of building the dyke and the additional trout ponds made it necessary to procure an additional horse and cart and all the work done throughout the year was entirely by the regular hatchery force.

Besides the dyke and ponds I began the building of a driveway from the upper end of the hatchery to the lower end of the hatching house and the work is about one-third completed. The assistant's house was painted. The outside by contract and the inside by my own men; also re-papered the house with my own force. A new fence was built around the garden and other buildings put in repair. I also completed two bass fry ponds at the lower end of the grounds using them this year for young sunfish and catfish.

We now have on the grounds 16 trout ponds, one pond for sunfish, one for catfish, one for bass and two fry ponds. In addition there are two ponds left of the original temporary trout ponds. These with very little work can and will be made into permanent ponds in the spring. Thus we have a total of 23 ponds.

The drought did not harm this hatchery in the slightest degree. The spring which supplies the property maintained nearly its normal flow of about 2,000 gallons of water a minute. Spruce Creek was for that stream very low, but at no time was there a depth of less than six feet in the shoal water. In view of the severe character of the drought this year I think it may confidently be predicted that there never will be a shortage of water in this hatchery.

An ice house and a meat house is badly needed. I have your authority to construct the first but the other ought to be built in 1909. There will be in the summer of that year 23,000 large fish and more than 100,000 fingerlings to be reared to breeding size and these fish will take a large amount of food. A meat house and cutting machine operated by water could prepare this food in half an hour. By hand it will take two men nearly a half a day.

It will also be necessary to build this coming year at least a dozen additional trout ponds to accommodate the increased stock, and these ponds should average at least 40 feet in length with a proportionate width. The lake trout pond can easily be finished by the hatchery force by June when by the employment of three or four laborers I think by late fall we can have a large bass pond finished as well as the trout ponds that I have spoken of.

I received 100 additional shipping cans making my stock 245, sufficient for the needs of the hatchery, although I should have five additional to supply that number which were lost last year, not by any of my applicants but by applicants for fish shipped from the Wayne hatchery.

Respectfully,
WM. F. HAAS,
Superintendent.

SPRUCE CREEK HATCHERY, STATION No. 8.

Distribution of Fish, etc., from December 1, 1907, to November 30, 1908.

Brook Trout.

Allegheny county,	3,000
Blair county,	201,500
Bedford county,	111,500
Cambria county,	121,500
Clearfield county,	27,000
Fayette county,	55,500
Fulton county,	10,000
Franklin county,	5,000
Huntingdon county,	120,500
Indiana county,	6,000
Juniata county,	12,000
Mifflin county,	3,000
Perry county,	22,500
Somerset county,	36,000
Westmoreland county,	24,000
Total,	759,000

Sunfish.

Blair county,	1,500
Bedford county,	1,800
Cambria county,	900
Centre county,	3,000
Franklin county,	1,200
Indiana county,	1,500
Lebanon county,	1,500
Mifflin county,	300
Northumberland county,	300
Total,	12,000

Catfish.

Lebanon county,	600
Huntingdon county,	900
Total,	1,500

REPORT OF CHARLES H. NESLEY.

Field Superintendent.

Honorable W. E. Meehan, Commissioner of Fisheries, Harrisburg, Pa.:

Sir: I take pleasure in submitting to you my first annual report of field work as Field Superintendent.

I began my first operations at the Torresdale hatchery, April 1, 1908, starting in with painting boats, calking boats and such preliminary work as was necessary to do work on the river Delaware. I began the collection of adult fish for propagating purposes and gathered 3,569 fish as follows:

Sturgeon,	85
Catfish,	2,274
White perch,	164
Sunfish,	760
Calico bass,	36
Yellow perch,	219
Black bass,	31

On the 15th of April I went to Wayne county to begin the collection of yellow perch and pickerel eggs under the personal supervision of yourself. There was collected on these operations 178,000,000 yellow perch eggs and 244,385,000 pickerel eggs. After the perch and pickerel work was ended, I was ordered to Torresdale for the purpose of collecting shad eggs on the Delaware river and there was collected about 10,000,000. Every effort was made by us, including the Superintendent of the hatchery at Torresdale, to collect every shad egg that could posibly be had. A peculiar point about this work was that many of the spawning shad were very nearly but not quite ripe and experiments were made to try and ripen them by retaining them in the ponds. The most difficult part was that we could not keep the crib near enough to where the shad were caught, and it was found impossible to get a live shad to the crib. There was also a number of experiments made on the fertilization of salt water herring. We tried the dry and wet method of taking the eggs, in fact every way even to the salting of water in order to fertilize the eggs but still without good results. We hope that next year we will have better success. I think the reason was that we began too late when the water temperature has risen too high.

On the 6th of May I returned to Wayne county to engage in the collection of bass fry in the ponds and lakes of Wayne county and was assigned to Independent and Hickory lakes near the village of Poyntelle. At this point you left your work on Sly lake in order that I might benefit from your knowledge and experience with respect to the methods employed by the bass in building nests, how to

find them and how to dip the young bass. What you taught me was very beneficial as was shown by the amount of fish that was collected by me at those two places.

There were experiments made as to the length of time it took to hatch the bass and found that it was from seven to eight days. I gathered in Wayne county on these two lakes,. Independent and Hickory, about 45,000 and from all about 170,500.

There were some experiments made by me in regard to the artificial fertilization of sunfish eggs. On June 18 I caught with a seine a number of sunfish that were on the spawning beds and took their spawn by the same method as I employed with other fish, and was surprised when nearly all the eggs so taken became fertile, and that they flowed freely from the female. They are very adherent and stick tightly to anything they come in contact with, but this quality did not injure those which adhered to wet objects. The eggs are nearly transparent and have a yellowish tint.

We made another experiment on the following day with about 20 fish that I gathered in the same manner as before, namely, on the spawning beds, and I took the eggs by the dry method. As soon as the eggs were taken and fertilized, I placed them in a large agate bucket where they immediately adhered to the sides and bottom. I tied a mosquito bar netting over the top and submerged them in about five foot of water, fastened the bucket to a stick in so that the top was about 18 inches from the surface. I went there every day to examine the condition of the eggs. I found very few white eggs among them. On the morning of the 7th day I came to the stake I noticed a large school of fish along the top of the stake that had apparently come through the mosquito bar to the surface.

After taking the bucket out I found that there were still a few eggs that were not hatched and they disappeared entirely by the next morning. There must have been about 20,000. The time it required for hatching was seven days with a water temperature of 58 degrees varying a degree or two in the morning and at night. I was very glad that I made the experiment and immediately reported the matter to you.

I also observed that on two occasions bass and sunfish were on the same nests. It looked to me as if the bass had driven off the sunfish and occupied the nest that was built by the sunfish but cannot understand why the latter were allowed to remain. Most of the bass when disturbed are very vicious and often would grab at my hand when I would take spawn from the nest for the purpose of examining its condition. We found one nest where the female and male were in the act of spawning. The female was a large fish, weighing perhaps four pounds, while the male was much smaller, measuring only nine inches and weighing only about half a pound.

I watched the nest very carefully every day and the male fish was always there at his post and always very vicious. He would come close to the surface and make a circle and immediately go back on the nest.

While engaged in the collection of the bass fry we found time in the afternoons to collect adult fish for the purpose of transferring the same from one lake to another. It had been shown previous to that that by transferring fish from one lake to another better results were produced; the fry from the fish so transferred became stronger.

On July 12th a number of citizens of Wayne and Lackawanna counties notified me personally that Tully Creek, McCabe Creek, Equinunk, Shehawken and tributaries of the same were drying up but that the trout were still alive in small pools and the citizens at and near Poyntelle, Wayne county, offered to help collect them and place them in waters where they could live. A point of special note and one that I was very grateful for, was that some of the citizens unhitched their horses while raking hay in their fields and turned over their teams for the use of hauling the fish from the drying up streams to the larger ones and some were transplanted into Poyntelle and Hickory lakes. Altogether we gathered in this manner and saved 28,250 fish, most of them from three to nine inches long. We found in some pools as many as 100 trout but they had all perished from the stagnation of the water.

About the 20th of July I returned to the Wayne hatchery at Pleasant Mount in Wayne county and was under the supervision of Mr. Nathan R. Buller, the Superintendent. We then began the construction of a large perch pond and supply pond and I worked there until called to go on the Schuylkill canal for the purpose of transferring the fish from the canal into the Schuylkill river so that they could be saved from the drought. There was transferred from the paper mill dam at Royersford, Pa., 850 large mouth bass, 14,000 catfish and about 15,000 miscellaneous fish such as horn chubs, suckers, carp and a few sunfish.

From there I was sent to Speeceville, Dauphin county, where in a locked chamber of the Susquehanna Canal Company and other ponds the removing of the fish began by Mark Jaynes, my assistant, and myself. We transferred about 18,000 fish, mostly sunfish and catfish. Mr. Speece, an old gentleman, living at Speeceville, rendered every aid possible to help in the work using his storage house for the storing of nets and allowing his watchman to guard the nets at night so they might not be destroyed.

After finishing my work there I reported at the office of the Department and was sent to Bellefonte hatchery in Centre county where I was under the supervision of Mr. Howard M. Buller, the Superintendent, and Mr. B. O. Webster, the assistant superintendent. With my assistant, Mark Jaynes, we were at once put to work sorting the trout and I wish to express my thanks for the consideration they showed me. All my spare time was taken up by gathering wild trout for the purpose of taking spawn. A very large number were caught and 75,000 eggs was gathered from them.

From the Bellefonte hatchery I was transferred to the Erie station located in the city of Erie, for the purpose of gathering lake herring and white fish eggs. We began with an experiment conducted under the supervision of Mr. Hartman, of taking eggs from fish that were placed in a crib made of netting and anchored out in Presque Isle Bay collected in that way, the first white fish spawn ever gathered at Erie.

I was sent together with four men to Port Stanley, Canada, for the purpose of collecting lake herring eggs, and if it had not been for the violent storms a very large number of eggs could have been collected there. We were there six days but only could work two, but in that time succeeded in gathering 9,600,000 eggs of the Jumbo herring. A larger amount of eggs could have been collected even in these two days had it not been for the scarcity of male fish. This condition ap-

parently was noticeable all over the western end of the lake. From a letter written by Mr. Downing I found that he had the same trouble.

I will here take pleasure in thanking Mr. A. C. Brown, of Port Stanley, for the courtesy shown to our men and for the introduction to a lot of leading citizens of his selection in the Province of Ontario. They seemed greatly pleased in the work of propagating fish in Lake Erie asking many questions as to our methods employed in propagation. They were outspoken in their praise saying that the fishing has been much better of late years than it had been for the past eight or ten years and that it is due to the work of Pennsylvania and the United States. Mr. A. C. Brown made a record catch of eleven tons and eight hundred and fifty pounds in one day's fishing.

I went back to Erie thinking we could get eggs with less expense on the port of Erie and gathered at that port a total of 57,220,000 eggs. An expedition was started for Port Maitland for the purpose of gathering white fish eggs. We found the pound net fishermen at this port very cordial and Mr. M. Hartman, a spawntaker, and myself, went to the fishery of Mr. Sanders Hoover about five miles to the west of Port Maitland. The fishery consists of nine pound nets. Mr. Hoover showed us every attention possible and we stopped at his house. We were there four days and owing to a violent storm most of his nets were placed out of commission and we were told by him it would not be worth while to replace them again this year.

We made arrangements with Mr. Hoover, the Honorable J. W. Raney, John Hoover, Walter Weaver, Abe Hoover and Jonas Hoover, who altogether fish 26 pound nets, for the taking of eggs at their fishery next year. These gentlemen catch about 900 tons of fish every year, the largest number being white fish. They have become more numerous every year at this place for the past three years and credit is given to the Department of Fisheries of Pennsylvania for the restocking of white fish in the eastern end of Lake Erie. They claim that fish from the extreme western end of the lake would never get as far east as their shore.

One of their number, Mr. Sanders Hoover, came over to see some of our hatcheries in Pennsylvania. He seemed greatly impressed at the large amount of eggs we had in the batteries.

A total of 235,000 frog and tad-poles were also gathered from Bone lake in Wayne county for distribution in the different counties throughout the State. A large number of fish gathered from Beaver Meadow Dam in Wayne county are still being held in the hatchery at Wayne county.

Respectfully,
CHARLES H. NESLEY,
Field Superintendent.

SUPPLEMENTARY REPORT ON FIELD WORK ON THE DELAWARE RIVER.

By Charles H. Nesley.

SHAD WORK.

I left Wayne county on May 4th and arrived at the Torresdale hatchery May 5th and after a conference with the Superintendent, Mr. Jerry R. Berkhous, went to Washington Park and took charge of the spawn gathering at the Bennett Fishery. In the operation of the shad work the following dispositions were made:

Philip Hartman at the Page fishery near Neshaminy, Lawrence Laurenson to oversee the gillers at Bridesburg, and Solomon Clauson to oversee the gillers at Torresdale.

Mr. Jerry R. Berkhous, Superintendent of the Torresdale Hatchery, owing to my being kept entirely at Washington Park, supervised all of the work of all of the men just mentioned. George Warneberg, assisted me at Washington Park. This once famous spawn taking fishery, for the last four or five years has been steadily yielding less and less eggs. Last year I understand only about 60,000 were gathered there. This year the number was greater but far below what it used to be when the United States Government sent the Fish Hawk into the river and was able to fill all its jars with eggs time and time again from this one place.

In all I gathered eggs from 21 fish. This is a very low yield of eggs for that many fish, but many of them were half spawned before having been caught. In all there were gathered about 10,000,000 eggs, or more than double the number gathered last season.

The fish at Washington Park ran very large, averaging about five pounds per fish. On the rest of the river under our charge, the fish were notably smaller. The general run of the females at Washington Park were between seven and eight pounds. The catch of shad throughout the season was larger so the fishermen say, than for any season in eight years, but it was smaller than it would otherwise have been on account of many storms which muddied the river and put the shore nets out of business sometimes for days at a time. Muddy water operates against the shore nets. If not too muddy, it is rather in favor of the giller because apparently the fish cannot see the gilling twine. It has been said that the eggs from the gill nets are better than those from the shore nets, but although I kept as close a watch as possible, I could not see very much difference.

All the eggs taken by the employes of the Department were taken by the dry method and most of the eggs taken by the gillers were taken in the same manner but some used the old wet method. Whenever the weather was cool the eggs taken by the wet method were usually poor but whenever the weather was warm there was a large percentage of well fertilized eggs and compared favorably with the eggs taken by the dry method.

The Commissioner who kept a close watch on the shad fisheries on the Delaware river last year, found that there was a very large number of females within 24 hours of being ripe and I found the same thing this year. Fully one-third of the fish caught in the latter part of the season were within one or two tides of being ripe, but the peculiar feature about it was that the same condition prevailed in the neighborhood of Washington Park. We had what was to us good evidence that a marked increase in the number of shad may be looked for in the Delaware river in the near future.

An unusual number of very small shad or what are probably yearlings, perhaps two year olds were found among the herring in the Nigger net of the Bennetts fishery at Washington Park. The Nigger net is a small net with a herring mesh that is thrown around the big shad net just before the latter is hauled. The general supposition is that when the young shad leave the river in the fall that they remain in the ocean until they are mature and come back to spawn, but the fishermen on the Delaware river hold differently that the shad come back to the river every year as yearlings and two year olds and finally three year olds or spawners. The finding of these small shad which are about the size of a herring or a little larger, seem to me to prove the claims of the fishermen.

These small shad are not found above tide water as far as I can learn and the further up the river within tide water that the nets are used the less are the number of these young shad that are caught.

HERRING WORK.

When the shad work was well under way I received word from the Commissioner to take eggs of the herring. I took a large quantity and used the dry and wet method of fertilizing but had no success. I gathered several millions of eggs at the Page fishery from fish that were so ripe that the eggs were running naturally from them. I found plenty of fish with milt although the eggs and the milt proved perfectly good, fertilization seemed to be impossible. The eggs turned white within five minutes after being fertilized with either method.

I am inclined to think that we began our work a little too late for the temperature of the water had risen to 72. We know that a sudden rise of temperature is unfavorable to fertilization of shad eggs and as the herring is closely related to the shad I assumed that this was the reason why we failed with the herring. There was a very heavy take of herring in the river this year, heavier than last year and much larger and better fish.

I conducted the experiment of attempting the fertilization of the herring daily for over a week and gave the same attention and care to them as I did to the shad eggs taken the same week which were thoroughly and well fertilized.

WALL-EYED PIKE.

One of the gratifying features connected with my work on the Delaware river was the catching as far south as Washington Park of large numbers of wall-eyed pike. This fish was introduced into the Delaware river many years ago by the Fish Commission above Trenton Falls, most of them being planted, I understand, north of the Water

Gap. Year by year they have been working their way down the river and a few years ago a few specimens were caught as far south as Birmingham.

Nearly every day three or more fish weighing from five to six pounds were caught in the net at Washington Park. They were, of course, liberated, being game fish. I believe, owing to the food qualities of this fish that New Jersey and Pennsylvania should enact a law permitting the fishermen to keep wall-eyed pike caught in their nets below Trenton Falls.

The appearance of these fish and in such numbers is proof of the good results which follow artificial planting of fish. Not only were wall-eyed pike caught almost daily in Washington Park, but were caught in large numbers in the neighborhood of Torresdale. One fisherman during the shad season caught more than fifty, all of which he sent to the hatchery at Torresdale.

The Page Shore Fishery or Dutch Neck and Tullytown, and in fact all the shore fisheries, caught wall-eyed pike in greater or less numbers.

STURGEON.

There are some signs of a revival of the sturgeon fishery in the Delaware. More young fish running from a foot and a half to three feet in length were caught than in any one year for several years past. We took thirty-two in two hauls with our own nets at Taylor's Point. Scarcely a haul made at the Washington Park fishery failed to unsnare several. On one occasion over thirty were caught in a single haul.

The Page Shore Fishery caught large numbers and we have reports of the catching of them in quantities as far north as White Hill at the Sadler fishery. Nearly all of the fish of three and four feet were spawners. The fishermen are naturally very much elated over this and when they found that these small fish contained spawn, several of them, notably Mr. Sadler, impounded the fish and sent them down to the Torresdale hatchery where more than a hundred are now gathered and held in one of the ponds in the hope that eggs will be secured from them next year.

Just before concluding my work on the Delaware river, the Superintendent, Mr. Berkhous, found three females ripe, but unfortunately there were no ripe males. It is therefore evident that there must be in order to be certain to fertilize successfully a big enough proportion of males in the ponds.

REPORT OF CHIEF WARDEN.

Board of Fishery Commission:

Gentlemen. Please find herewith my report of the work of the wardens during the year beginning December 1, 1907, and ending November 30, 1908. I have had eight salaried men under my control and 253 specials, or men who received no salaries, but who, under the Act of 1901, must depend on half the fines which are paid as the sole compensation, including expenses. One of the regular wardens, C. H. Nesley, retired in April to accept the position of Field Foreman in the Department. He was succeeded by E. H. Stephan, one of the specials. I am glad to be able to say that the regular wardens, generally speaking, performed their duties very satisfactorily and some of them in a manner to merit the highest praise. The majority of special wardens who evinced activity also performed their work either in a manner beyond reproach or in a praiseworthy way. Some had to be cautioned against proceedings, which while in themselves had the appearance of persecution rather than prosecution for violation of the law. A few had to be admonished, and a few conducted themselves in such a manner that their dismissal became necessary. Among the causes which led to dismissal were drunkenness, insubordination and insolent conduct when reprimanded for what was considered improper conduct, and in one instance an insolent refusal to return the portion of a fine collected where on investigation made by the Commissioner himself it was found that the offense committed was purely technical and the fine imposed far beyond what it should be. The names of the specials removed for various reasons are John Lauterbaugh, Ralph Ross, Allen N. Smith and Thomas Allison.

Noticing a tendency on the part of some of the wardens, particularly among the specials, to make arrests for purely technical offenses and when the offender was plainly innocent of intent to commit a wrong, with the approval of the Commissioner, I instructed the regular wardens especially to act cautiously in such instances and not to make any arrest in the future for purely technical violation unless there was some attending circumstances which made such arrest obligatory. As for example, in the one case of arrest made by the Commissioner himself. In this case the defendant, a member of a Committee of a Club, acting under instructions of the committee, drew off the water of a dam on the club's property and removed and killed a large quantity of game fish without first getting a permit from the Department to do so. Before completing the work the defendant ceased operations because he claimed he was informed that what he was doing was a violation of the law, a fact which he declared he was innocent of. A general complaint was made to the Department of the affair and notwithstanding it appeared to have been technical the manner of the complaint and the quantity of the fish killed made legal action necessary.

I instructed the wardens that when they came upon violations which were strictly technical and there were no serious attending consequences, not to make arests but warn the person or persons, and if they found the warning was received in good part to pass the matter over. I directed them to devote their energy in making arrests to clear violations in which there could be little or no excuse and where their was general knowledge that the act was unlawful; as for example, undersized fish, game fish out of season, improper netting, use of illegal devices and methods. The result has been highly beneficial and some of the wardens have especially distinguished themselves by their intelligent enforcement of the law. In this connection I would particularly mention wardens Stephan, J. P. Albert and C. R. Holland. I do not wish by this to detract in the slightest from the wise work done by the other regulars. The conditions existing in the territory of some of the wardens render the exhibition of the wisdom which they display less conspicuous. This is particularly noteworthy in the districts covered by Wardens Shannon, M. F. Albert and Conklin. In warden Shannon's district violation of the law is widespread and flagrant and conditions were such that made it necessary for him to prosecute nearly every case with which he met. In the majority of instances an exhibition of moderation was misunderstood and taken advantage of. For example when warden Shannon received instructions to show leniency and not make arrests for trifling departure from the fish basket and fishing mesh of nets, those who were admonished and not arrested spread the report that wardens were instructed not to make arrest for general violations and when arrests were made some were unjust enough to complain to the Department that the warden was exceeding his authority.

Arrests.	Convictions.	Acquittals.	Fines unpaid.	Fines paid.	Jail.	Appeals.
211	156	55	4,336	2,351	18	32
27	27	0	1,225	950	4	1
346	302	41	9,026	6,550	32	23
584	485	96	14,587	9,851	54	56

It will be noticed that when the number of convictions and the number of acquittals are added that the total lacks three of the total number of arrests. This is due to the fact that in the case of one special fish warden two arrests were made without any action having been taken by the Justice of the Peace, and one was a seizure of nets in Lake Erie by the crew of the Commodore Perry, and the owner thereof keeping beyond the jurisdiction of the court although information has been sworn out against him. The following are tables of the work performed by the regular wardens, special wardens, constables and State police:

	Arrests.	Convictions.	Acquittals.	Fines unpaid.	Fines paid.	Jail.	Appeals.
Regular Wardens.							
J. W. Criswell,	20	17	3	415	345	0	0
C. H. Nesley,	10	4	6	95	20	0	0
E. H. Stephan,	1	1	0	25	25	0	0
W. E. Shoemaker,	17	14	3	475	225	1	1
C. R. Holland,	25	18	7	381	131	2	8
J. E. Conklin,	7	7	0	215	80	1	0
G. D. Shannon,	59	48	11	1,180	655	5	11
J. P. Albert,	13	12	1	235	205	0	0
M. F. Albert,	30	23	7	955	455	8	0
M. P. Maitland,	29	12	17	360	210	1	3
	211	156	55	4,336	2,351	18	32
Special Wardens.							
Jenkin Davis,	1	1	0	20	0	0	0
J. W. Edwards,	2	2	0	50	50	0	0
R. S. Tucker,	1	1	0	10	10	0	0
Wm. F. Herman,	1	1	0	10	10	0	0
Harvey Blade,	2	0	0	0	0	0	0
O. F. Bruner,	3	3	0	75	75	0	0
John Lauderbaugh,	2	2	0	250	0	0	0
J. L. Sherwood,	13	13	0	580	505	0	3
Jas. Hoover,	2	2	0	50	25	0	1
J. B. McCauley,	22	21	1	525	350	7	0
N. M. Wood,	2	2	0	100	0	2	0
John B. Alderman,	11	11	0	110	110	0	0
Hiram Brown,	6	6	0	175	150	0	0
John F. Miller,	1	1	0	250	250	0	0
Henry E. Boda,	8	7	1	190	165	0	0
Wm. J. Acker,	23	14	9	380	255	3	0
James D. Geary,	16	16	0	585	585	0	0
James Galligan,	5	5	0	300	100	2	0
Ralph Ross,	15	15	0	925	650	3	1
Harry J. Maust,	9	9	0	240	215	1	0
J. H. Thompson,	1	1	0	10	10	0	0
H. W. Staley,	4	3	1	40	40	0	0
F. J. Benson,	4	4	0	105	105	0	0
David F. Hess,	3	3	0	75	50	1	0
Chas. Burger,	4	4	0	100	50	2	0
Geo. Spangler,	2	2	0	180	160	0	1
W. H. Kuhl,	2	2	0	50	50	0	0
Geo. W. Fehr,	38	25	13	620	420	2	6
J. E. Phillips,	2	2	0	20	20	0	0
Sherwood Simmons,	1	1	0	0	0	0	0
Allen W. Smith,	1	0	1	0	0	0	0
Richard F. Draper,	1	1	0	100	0	1	0
E F. Haney,	1	1	0	1	0	0	0
Fr. Marter,	15	15	0	255	180	1	3
James Frew,	1	0	1	0	0	0	0
H. E. Bohall,	1	1	0	5	5	0	0
Levi Day,	1	1	0	10	10	0	0
David E. Williams,	3	2	1	25	25	0	0
Jacob D. Sizer,	53	47	6	960	775	5	1
Wm. Shugart,	1	1	0	25	25	0	0
Calvin Eckman,	1	1	0	5	5	0	0
Oliver Sheeler,	14	8	6	250	225	0	1
R. J. Porter,	3	3	0	75	75	0	0
Giles L. Tompkins,	3	3	0	100	0	0	0
L. H. Tremblay,	4	4	0	100	75	0	1
H. S. Reichard,	1	1	0	25	25	0	0
Henry B. Terrill,	1	1	0	5	5	0	0
Harry Bauchard,	1	1	0	25	25	0	0
John L. Beury,	2	2	0	100	100	0	0
W. E. Meehan,	1	1	0	30	30	0	0
Chas. E. Phillippi,	1	1	0	25	0	1	0
Saml. G. Fogel,	5	5	0	275	50	0	3
John A. McNary,	15	14	1	200	200	0	0
Thos. Albring,	1	1	0	10	10	0	0
Owen S. Kramer,	1	1	0	20	20	0	0
J. O. King,	3	3	0	300	200	1	0
Wm. Waltenbaugh,	1	1	0	100	100	0	0

	Arrests.	Convictions.	Acquittals.	Fines unpaid.	Fines paid.	Jail.	Appeals.
Glen Lyon Rod and Gun Club,	1	1	0	25	25	0	0
Capt. Jerry Driscoll,	1	0	0	0	0	0	0
C. W. Foster,	2	2	0	0	0	0	2
	346	302	41	9,026	6,550	32	23
Constables.							
J. H. Heilbaugh,	1	1	0	40	40	0	0
P. C. Huckenberry,	2	2	0	35	35	0	0
State Police,	4	4	0	85	10	1	1
E. D. Herman,	5	5	0	125	125	0	0
J. S. Reese,	4	4	0	50	50	0	0
Jonah Gadley,	1	1	0	90	90	0	0
Stephen Staley,	2	2	0	200	0	2	0
P. G. Hare,	8	8	0	800	600	1	0
	27	27	0	1,225	950	4	1

No part of the fines imposed through the work of the regular wardens was retained by those officers, the entire sum going to the benefit of the State. The special wardens and the constables received a half of the fines which they collected. Fifty-seven persons went to jail. Their fines are included in the columns devoted to fines imposed as are also the sums of those who subsequently took appeals. In addition to this there were a number of cases in which the defendants were by reason of poverty, sickness in the family or otherwise, who could not promptly pay their fines, and acting under advice from the Commissioner and myself these were given time to pay rather than strictly enforce the law and send them to jail. The amounts now outstanding through such leniency is very nearly $800, nearly $500 of which were cases by regular wardens and $300 by special wardens. There is a large sum still due the State from Justices of the Peace who have not turned the amount into the County Treasurer, and some from County Treasurers who have delayed turning the funds over to the State Treasury. In one instance a County Treasurer by error in making his returns sent to the State Treasury nearly $200 as violation of the Game Laws and the error was not discovered until too late to make the proper claim.

A comparison of the work performed by the wardens this year and last year show the folowing:

	Arrests.	Convictions.	Acquittals.	Fines unpaid.	Fines paid.	Jail.	Appeals.
1907,	584	485	96	14,587	9,851	54	56
1908,	536	475	59	14,805	8,295	22	

On account of the great drought which prevailed in this State many of the streams became very low and some were completely dry the greater part of their length. In some sections of the State in order to save the trout the regular wardens and many of the specials were forced to suspend their work of seeking violations of the law and give their attention to saving the fish by transferring them from unsafe waters to safe waters. Many thousand trout were rescued in this manner. Special attention was also given to attempting to abate the pollution of the streams. Owing to the drought the damage caused by pollution was more noticeable than ever. The decision of the Superior Court having been affirmed the jurisdiction of the Department of Fisheries of this type of fish destruction more was accomplished in stopping water pollution than in any two previous years. The Commissioner gave strict orders that arrests for water pollution were only to be made as a last resort, owing to the fact that the owners of most establishments were under the impression that they were exempt from the law regarding pollution. The policy was to visit the industrial establishment, examine the character of the pollution, interview the owner, convince him that he was amenable to the law and to suggest as far as possible means for abating the nuisance. As this task required considerable tact I assigned only the most experienced of the men and took a large share on my shoulders, and this work will act in part for the great fall-off in the number of arrests which are usually credited to me. A large part of the work also fell to wardens J. P. Albert, Shannon and Conklin. In every instance the three wardens performed their work in a manner as to bring letters of commendation from the owners of the industrial establishments. Warden Albert by his efforts succeeded in having over forty industrial establishments make arrangements to stop the pollution of the water in his district. Warden Shannon has over half a dozen to his credit and Warden Conklin nearly two dozen. I was also successful in every case in which I was connected. In one instance the abatement of the trouble entailed the purchase by the owners of the establishment of a large tract of land on which to establish filtration beds and subsiding reservoirs. This naturally takes some time to do and in the meantime the pollution exists to some extent but much less than it was. This case is that of a tannery at Elkland and the mention is made here specifically because some complaints have since come to this office that there yet remained some pollution.

Another cause for the falling off in the number of cases prosecuted by me was the increased calls made upon me by both the regulars and specials to assist them in cases which they had. In all I conducted personally ninety-three cases of this kind saving the Department counsel fees and securing a number of convictions which otherwise would have ended in acquittal through inability of the warden to undertake the case according to rule.

I wish again to call your attention to the table and note that of the convictions fifty-six defendants appealed. There is an impression in some quarters that in cases of conviction in summary proceedings a man cannot take an appeal. This impression founded in ignorance of the proceedings in summary convictions has been apparently fomented by an element sympathizing with those who make a practice of violating the fish laws. Warden Shannon alone has eleven cases

in court on appeals. Warden Holland eight and Warden Nesley nine. Any defendant can take an appeal just as easy as in any other proceedings to the Court of Quarter Sessions if he can show any cause whatever for his plea. Nearly as many appeals were sustained as were dismissed by the County Court and the decisions handed down by the court which form part of the Commissioner's Report will show this conclusively.

In certain sections men who violate the fish laws are lawless and do not hesitate to attempt to commit murder to escape the consequences of their acts or in order to pursue them uninterruptedly. Warden Holland while in the performance of his duty was struck on the head with a stone and fell semi-conscious into the river. Fortunately the water revived him and he was able to save his life, and although this happened six months ago he has not yet fully recovered from his perilous experience. Warden M. F. Albert came upon a group of men illegally taking game fish whereupon two of them covered him with their guns while the others finished gathering in the fish and made their escape. Warden Shannon narrowly escaped with his life through a group of lawless people caught in the act of taking more than two tons of fish by illegally meshed nets in waters that had been drawn off. His life was only saved by the courage and assistance of a small group of men who hurried him into an adjoining building.

Owing to the drought of the past season the destruction of fish life by the use of gigs, fish baskets and nets has been greater than any previous year. The number of fish baskets in the waters of Pennsylvania seem to be increasing each year and many wing walls extend from shore to shore completely shutting off the migration of fish. Owing to the extremely low waters it was impossible for the fish to move either up or down without going through the basket. At no time in the season was the stream sufficiently high to cause the water to flow over the wing walls. In addition to this many baskets were constructed for the purpose of fishing when the streams should raise, but as the streams remained low all season there were many baskets that water did not flow into and thereby formed a dam completely shutting off the migration of fish and preventing them from going into the deeper pools in the stream. The reports from every section of Pennsylvania show that the gig also has been doing its share to exterminate fish life. While the streams were low the gig fishermen took advantage of the opportunity and fished many streams throughout their length which would not have been possible if the streams would have been normal, as many pools would have been too deep to permit fishing with a gig. Fishing with a gig seems to have been more general throughout the State this year than any previous season.

On the night of September 22, a traveler on a train going from Altoona to Harrisburg counted 47 gigging lights on the Juniata river between Lewistown and Rockville. The same proportion of fishing by use of the gig seems to have existed in waters generally over the State and many streams are now practically barren of fish sufficiently large to be caught between the prongs of the gig.

Respectfully submitted.

J. W. CRISWELL,
Chief Warden.

COURT OPINIONS.

During the year the wardens were active in enforcing the law, but owing to the precedents established by former rulings of the Courts there were not so many appeals because in almost every case the defendant was caught in flagrant delicta or in the very act. Such being the case the defendants had little else to do but plead guilty or to accept the decision of the magistrate.

There has been a complaint that the defendants in cases of violation of the fish law do not have their rights sufficiently defended, but such is not the case as has been proven a number of times. The constitution provides the methods in summary conviction by which an appeal can be taken and the provisions of the constitution are carried out in the act of 1876. All that is necessary for a defendant who thinks he has been unlawfully convicted is to ask for an appeal from a Court of Record, and here there is quite a misunderstanding. In every case the Court grants on the papers filed in Chambers a hearing when the defendant can set forth the grounds upon which he bases his right of appeal. There is no snap judgment in the matter. In one of the cases quoted below there was an appeal in Luzerne county where the defendant asked for the appeal; it was promptly granted and after hearing the case the judge set aside the verdict of the magistrate and acquitted the defendant. Had the case been submitted to the Court as a misdemeanor the defendant would have had to appear before the Court of Quarter Sessions. There would have been a hearing by the grand jury which, if it found a true bill, would have necessitated a trial by a petit jury. This would have enormously multiplied the expenses. The jury men and witnesses would have had to be paid and the man if convicted would have had the taint of a malefactor.

That the right of trial by jury in minor cases is not a constitutional one has been so often adjudicated by the courts as to be hardly worth arguing about. In a case in Susquehanna county a man was convicted of placing dynamite in a stream by the justice of the peace. He appealed to the Court of Quarter Sessions for a hearing and among his demands was that he be accorded a trial by jury. The court in a strong opinion denied this request because the law does not provide for such trial and because the right to have it is not secured by the constitution. The court said: "The constitutional power of summary conviction upon a charge of this character without the intervention of a jury is too well established in law to be overturned without legislation and too well grounded in expediency to be disturbed either by legislation or judicial decision. We have no such veneration for trial by jury as would lead us to extend that method of administering justice to a single hairbreadth beyond the legal limit already fixed." The court then proceeded to hear the case de novo and after summing up all the evidence presented reversed the verdict of the magistrate and discharged the defendant.

The necessity of careful wording of statutes is shown in a decision in the court of Berks county. The act of May 29, 1901, recites that it is legal to use dip-nets of certain prescribed size and character during certain months of the year. There is in the act however nothing which makes the use of these nets illegal at other seasons of the year and the court therefore held that a man who used a dip-net out of season in which they could be lawfully used was not guilty and discharged him. Whether this opinion would stand a test of the higher courts in view of their decisions declaring that only methods of taking fish are legal which are specifically permitted is not held worth arguing as it is to be hoped that a newer and better fish law will be enacted by the next Legislature.

Among the decisions is a case from Armstrong county where the court decided that in a case of an acquittal the Commonwealth had no right to appeal. An exception was noted by the Commonwealth but as yet no appeal has been taken. If this opinion should hold good it would leave the Commonwealth at the mercy of ignorant and dishonest magistrates.

In Lebanon county several persons were arrested and convicted in summary proceedings before a magistrate for violating the fish laws. They were convicted and fined whereupon they took out an appeal to the Court of Quarter Sessions where after hearing the court declined granting the appeal on the ground of no cause shown. The defendants appealed to the Superior Court of Pennsylvania which sustained the lower court. Thereupon the defendants took out an appeal to the Supreme Court which denied the appeal and the defendants were compelled to pay their fine.

In Perry county the court decided in a fish basket case that the finding of the magistrate was not in accordance with the provisions of the act of May 29, 1907, because the man was found guilty under several sections of the act and the act imposed a penalty of $20 for each violation. The magistrate only imposed one fine of $20 and did not state under which provision he imposed the fine. The court held that under the act the magistrate had no discretion but must impose the fine for each act he found the man guilty. He therefore dismissed the case.

In Columbia county some persons used a seine under the provisions of the act of April 26, 1905, using the same through the ice much after the manner of a pocket. The Commonwealth claimed that a seine could only be used as a sweep and the justice of the peace fined the parties $25 each from which they appealed. The Court of Quarter Sessions ruled that the act did not sustain the contention of the Commonwealth and ordered the reversal of the judgment of the magistrate.

Some time ago the Wayne county court decided that an act of the Legislature could not make a stream navigable where it was not so in fact and that riparian owners on such streams had the right to forbid trespass. This decision was most sweeping as if it is carried out to its full meaning there are very few streams in the State in which the public can fish. The court held that as the State had granted the bottom of the stream to the owners of the abutting lands it could not make the stream public and therefore free to fishing by a mere act of the Legislature as that would be taking property without due compensation of law. It will be observed that while the owners of the land in question were willing to sue a fisherman for trespass they were perfectly willing that the State should rebuild a bridge over the stream on the ground that it was navigable. If their objections to the trespass was a good one they should have filed a

jrotest against the State for rebuilding the bridge, which they did not. The stream had really been fished for nearly a century and therefore was an open stream by usage. The case was taken up to the Superior Court on a certiorari which only allowed the court to examine the regularity of the proceedings below and could not go into the merits of the case really. The Superior Court sustained the lower court.

TRIAL BY JURY NOT A CONSTITUTIONAL RIGHT.

Wm. Walch was arrested on the charge of placing dynamite in certain waters and was convicted before the magistrate. An appeal was taken to the court asking for a new trial and among the requests was one that the defendant be accorded a trial by jury. The court allowed the appeal but denied the request to be heard by the jury and broadly stated: "We have no such veneration for trial by jury as would lead us to extend that method of administering justice to a single hairbreadth beyond the legal limit already fixed." The following is the opinion of the court:

Susquehanna County, ss:

Commonwealth	In Quarter Sessions,
vs.	No. 25.
William Walch.	April Sessions, 1907.

Appeal by defendant from summary conviction on charge of placing dynamite, etc., in certain waters, contrary to section 26 of the act approved May 29, 1901, P. L. 302.

OPINION AND ORDER.

Upon his appeal, the defendant has submitted three requests, viz:

(1) To dismiss the entire proceeding for certain alleged defects in the record.
(2) If the foregoing request be refused, then to grant a trial by jury upon the charge, or
(3) To try the case before the court, *de novo,* upon the merits.

We will consider these requests in the order of statement.
The alleged defects in the record are set forth in defendant's motion to quash the information and proceedings, viz:

First:—The information is defective in not charging the defendant with fishing with dynamite, nitro-glycerine, torpedoes, electricity, quicklime, etc.
Second:—The information is defective in not giving the defendant's addition of estate, mystery or degree.

Third:—The information is defective and void because the name John Doe is crossed or marked out in the same, and the name of William Walch inserted, without showing when, why, for what reason or by whom the same was done.
Fourth:—The information is defective in not charging the defendant with fishing unlawfully.
Fifth:—The information is defective is not alleging that dynamite, nitro-glycerine, torpedoes, electricity and quicklime are either explosives or poisonous substances.
Sixth:—The information is defective is not charging the defendant with any criminal offense.
Seventh:—The warrant issued in this case is defective and illegal; the words "alias Wm." showing to have been on this date, to wit, June 12, 1907, the date of hearing, freshly interlined in said warrant, when the warrant was originally issued for John Doe.
Eighth:—The information is defective in failing to negative the exceptions mentioned in the latter part of section 26 of the act of 1901; and the proceedings, record and warrant are illegal, void and defective.
Ninth:—The information and all procedings in the case are defective, illegal and void, the information failing to state the date upon which the alleged offense was committed and does not contain an exact description of the offense charged.
Tenth:—There was no evidence offered or given in this case to show that Card's Pond or any part of it is public waters of this Commonwealth, or that the same is within lands owned by the Commonwealth, or that the same was declared navigable by act or acts of Assembly, or made public by common law, or that it was made public by its owners by grant or usage, or that the same was ever stocked or planted with fish received from the State of Pennsylvania.
Eleventh:—The record and proceedings as returned by the justice and filed in this case, fails to show that the defendant exploded any dynamite in Cord's Pond.

The "First" reason must be disallowed because "fishing with dynamite, etc.," is not the only offense prohibited in the section of the act of Assembly upon which the information is based. That section is as follows:

> "Section 26. That from and after the passage of this act it shall be unlawful to fish, in any waters within this Commonwealth, with dynamite, nitro-glycerine, torpedoes, electricity, quicklime, or with any kind of explosive or poisonous substances or to place any substances in any water whatever except for engineering purposes, when written permission has been given therefor by the proper National, State, City or County Official or officials. Any persons violating any of the provisions of this act shall, on conviction thereof, as provided in section thirty-eight of this act, be subject to a fine of one hundred dollars and imprisonment of six months in the county jail."

Two distinct offenses are therein clearly prohibited, viz: (a) fishing with dynamite, etc., and (b) placing such substances in any waters except for engineering purposes with written official permission.

The information, it is true, does not charge the offense of "fishing," but it does expressly charge the offense of "placing."

"Second" reason must be disallowed because it suggests a defect which at best could only be raised upon certiorari and not upon an appeal where the court on a motion of this character should consider only jurisdictional defects.

The "Third" reason must be disallowed on the same ground assigned for disallowing the second reason.

The "Fourth" reason must be disallowed on the same ground assigned for disallowing the first reason.

The "Fifth" reason must be disallowed because the explosive character of substances named in the information is sufficiently specified by the averment "did cause the same to be exploded," if, indeed, it were necessary to do more than to mention the substances by name.

The "Sixth" reason must be disallowed on the ground suggested in disallowing the first reason, because the information does distinctly charge the defendant with the offense of "placing, etc.," forbidden by the act of Assembly.

The "Seventh" reason must be disallowed on the ground assigned for disallowing the second and third reasons.

The "Eighth" reason must be disallowed because the information does expressly negative the exception "for engineering purposes, etc.," by setting forth the purpose "with intent to kill and destroy game, food and other fishes."

This would be sufficient we think upon an indictment and much more upon the information which must be indeed set forth all essential elements, but is not to be judged by the fine rules of criminal pleading.

The "Ninth" reason must be disallowed on grounds already assigned.

The "Tenth" reason must be disallowed because the application of the law is not restricted to *public* waters, but expressly extends to "*any* waters within this Commonwealth."

The constitutional right to legislate concerning private waters as well as public waters we consider to be well established. We will not, however decide this point definitely at this stage, but leave it for final consideration upon the trial.

The "Eleventh" reason must be disallowed because so far as the information is concerned it expressly avers that the defendant placed dynamite and caused the same to be exploded in Card's Pond and so far as the evidence is concerned the testimony of the Commonwealth's witnesses, if believed, tends to establish that the defendant while he did not actually handle the dynamite, yet was present, aiding and abetting.

This in our judgment, would make him a principal amenable to punishment precisely the same as the individuals who actually placed and exploded the substance.

This point, however, we will not definitely decide at this time, but leave it for final consideration upon the trial.

Additional oral reasons were urged upon the argument, namely that the record does not disclose location of the waters within the jurisdiction of this court, in Susquehanna county, and does not disclose the specific offense whereof defendant was convicted.

The former must be disallowed because both the information and the evidence do sufficiently show the location of the waters in Lathrop township, said county; and the latter must be disallowed because the record expressly states that "the court finds the defendant William Walch guilty as charged in the information," which information is fully incorporated in the record, and furthermore the suggested defect is not one for consideration on appeal, but only on *certiorari*.

Our conclusion is that the proceedings should not be dismissed for any of the reasons assigned, but that the record should be retained for trial upon the merits.

II.

The request for trial by jury must be refused because the law does not provide for such trial, and because the right to have it is not secured by the Constitution.

The constitutional power of summary conviction upon a charge of this character, without the intervention of a jury, is too well established in law to be over-turned without legislation, and too well grounded in expediency to be disturbed either by legislation or judicial decision.

We have no such veneration for trial by jury as would lead us to extend that method of administering justice to a single hairbreadth beyond the legal limit already fixed.

III.

The third request, to try the case *de novo* before the court upon the merits, is granted.

The decisions exhibit and well-defined distinction in respect to the grounds held to justify in the first instance the allowance of an appeal from a summary conviction, seeming to establish by weight of authority that the allowance should be based upon other reasons than the mere denial of guilt; but, be this as it may, I am of the present opinion that when an appeal is once allowed the whole case will come up for trial by the court on the merits, with full power of the court to determine defendant's guilt or innocence under all the evidence.

This point, may receive further consideration upon the trial.

We note exceptions and seal bills for the defendant upon all adverse rulings herein contained, and we leave the case with the court and the district attorney for further proceedings in accordance with this opinion.

* * * * * * * *

Later the case came up for trial before the judge when the defendant was acquitted, the following being the opinion of the court:

Susquehanna County, ss:

Commonwealth vs. William Walch.	}	In Quarter Sessions, No. 25. April Sessions, 1907.

Trial July 28, 1908, before the court on defendant's appeal from summary conviction upon charge of placing dynamite, etc., in Card's

Pond, contrary to section 26 of the act approved the 29th of May, 1901, P. L. 302.

FINAL DECISIONS.

This case has now been fully heard upon the merits as well as upon the technicalities.

The offense charged is one of the most brutal and abominable forbidden by statute of this Commonwealth.

Only a character hopelessly depraved could possibly be concerned in its perpetration.

The prescribed punishment is ridiculously inadequate.

The State Fish Warden deserves the hearty commendation of all good citizens for his endeavor put forth in this prosecution to enforce this salutary law. At the same time we feel bound to observe that the delay of one whole year in bringing the case to trial against the present defendant, and the apparent absence of any vigorous effort to apprehend McKeeby and Stevens, the principal offenders, are unsatisfactory features which have contributed to an unsatisfactory result.

This defendant did not procure, place or explode the dynamite. At most, if the Commonwealth's testimony be believed, he met those men casually at the Pond and was only implicated by indirection.

That testimony is flatly contradicted and is claimed with some circumstances of uncertainty.

After a careful consideration, while we might recognize a preponderance if this were a civil issue, yet on a criminal issue of such gravity we find ourselves unable to reach a positive conclusion of defendant's guilt beyond a reasonable doubt.

Accordingly the summary conviction is now reversed and the defendant is found not guilty.

FISH BASKET LAW TOO VAGUE.

The act of May 29, 1907, P. L. 311, was designated by its authors to allow the use of fish baskets for the taking of eels, carp, suckers and catfish and prescribed it was to be supposed the penalties for violations of provisions of said act. Various requirements are set forth in the act and penalties are apparently prescribed for persons who do not comply with the wording of the law. Under this act suit was brought against a man in Perry county charging him with having a basket not in accordance with the terms of the law. Before the magistrate he was convicted and sentenced to pay a fine which the act seemed to impose. His counsel certioraried the case to court where the procedings were reversed and the defendant discharged on account of the defective record of the magistrate. The following is the opinion of the court:

Commonwealth of Pennsylvania vs. Cyrus S. Wright. } of Perry county, Pa. In the Court of Common Pleas No. 1, January Term, 1908.

CERTIORARI.

Opinion.

SHULL, P. J..

On information made before W. H. Meminger, Esq., the defendant was arrested on a charge of violating the fish laws of the Commonwealth. The information sets forth that on the 7th day of October, 1907, "Cyrus S. Wright did in the waters of the Juniata river unlawfully maintain and fish a fish basket. The bottom of said fish basket was not made of wooden slats, with well rounded edges, and the slats were not movable for at least three-fourths of the bottom that could be used for fishing at the time; and the fish basket did not bear the number of the certificate issued to the owner thereof in figures twelve inches in length, and.....did leave his basket set for fishing during the day time for one hour unattended.....contrary to the act of the 29th of May, 1907, P. L. 311." After hearing proofs, the justice made record as follows: "Therefore it appears to me the said justice that the said Cyrus S. Wright is guilty of the premises charged upon him by the said information. It is, therefore, adjudged that the said Cyrus S. Wright according to the form of the act of the General Assembly aforesaid be convicted, and he is accordingly convicted of the offense charged upon him by the said information. And I do hereby adjudge that the said Cyrus S. Wright for the offense hath forfeited the sum of twenty dollars lawful money, to be distributed as the act of General Assembly doth direct (and costs)."

Upon certiorari at instance of defendant the proceedings are brought into court and exceptions are made thereto. The first exception complains that one of the offenses charged, viz., "leaving his fish basket set for fishing during the day time for one hour unattended" is "without any evidence of the fact," and that, therefore, the conviction upon this charge is without warrant of law. The justice, in his record wherein the proceedings are all set forth at length, has included the evidence. While the evidence seems to be incorporated in and made a part of the record over his certificate, it is clearly no part of a justice's record, and does not warrant the court in considering it upon a certiorari. The record of a cause is a written memorial made by a public officer of the procedings, and, in a trial before a justice it does not include the evidence. And, when such evidence is returned with the record upon certiorari, it may not be considered by the court upon review of the cause; the regularity of the proceedings alone must control. (Comm. vs. Gipner, 118 Pa. 379.) The exception is, therefore, dismissed.

The second and third exceptions may be considered together, which complain that the record shows a conviction upon four specific offenses under the act: (1) maintenance of a basket not made of wooden slats with well rounded edges; (2) slats of which were not made movable, for at least three-fourths of the bottom; (3) that it did not bear the number of the certificate, in figures twelve inches in length; (4) in leaving basket unattended for one hour of the day time. And that a penalty of twenty dollars was imposed without designating for which violation the same was imposed. The finding of the justice is that the defendant "is accordingly convicted of the offense charged upon him by the said information." The inquiry naturally arises which offense? The fourth section of the statute provides that "for violating any specific provision of this act, such person shall be liable

to a penalty of twenty dollars," and in the seventh section it is enacted that "in all cases of conviction, the defendant or defendants shall be each sentenced to pay the penalty imposed by the section violated." It is apparent from the justice's finding, and the penalty imposed, that he intended to impose but a single penalty for the violation of a single offense among those charged, because he says "of the offense charged," and not offenses charged. But the act clearly directs that a penalty shall be imposed "for violating any specific provision of the act." If the language were doubtful as to this, it is rendered certain by the fact that the penalties are not of the same amount in the different sections of the act. Then too, if the act provided the penalty of twenty dollars for a violation of any or all of the specific violations of the first section of the act, under which the information is drawn, the penalty imposed would have been in accord with the statute; but the act does not state, neither will it bear such construction. This being the fact, there is no means of determining under which section, or for which specific offense in any of its sections, the fine is charged. An information, record, or indictment, must be sufficiently specific in its description of offenses and imposition of its penalties to protect against subsequent prosecutions and penalties for the same offense, and, from the record here presented, it is impossible to discover for which specific offense the penalty is imposed. In Carlisle vs. Baker, 1 Yeates 471, where two offenses were charged under a borough ordinance, that of "Placing goods on the footway of the street or on the porch," or "suspend them from a pent house," and the evidence showed a violation of both, viz., placing on the street and on the porch, but the penalty imposed did not cover both offenses, the procedings on certiorari were reversed because the judgment was for too small a sum, and it did not appear for which offense the penalty was imposed. Not only is there uncertainty as to which of the violations the penalty is to cover, and, therefore unlawful, but it is equally fatal, if it was intended to cover the several offenses charged under the respective sections. Where the statute fixes a specific sum as a penalty for certain offenses, the courts have no discretion or right to change or alter the amount of the penalty; it is error to make it less or more that the statute provides. (13 A. & E Enc. 62; Town vs. Verner, 3 W. 317.)

The fourth exception complains that no alternative in number of days imprisonment, as set forth under the statute, is prescribed, upon failure to pay the fine. The authorities upon this phase seem to be in some conflict. In Comm. vs. Borden, 6 Pa. 212, Judge Agnew held that the alternate period of imprisonment need not be made a part of the sentence, while in Comm. vs. Irwin, 1 Clark 408, Judge Bell holds to the conclusion that alternative term of imprisonment should be made a part of the judgment of the magistrate. We are constrained to hold that where the fine or penalty directed to be imposed by the statute is considered in the nature of a civil debt, and to be collected as other debts, the judgment need not set out the alternative; an entry of the judgment alone is sufficient. But, where, as in the case at bar, there is no provision, or the law does not contemplate the issuance of a capias ad satusfaciendum, the judgment is incomplete unless the alternative is set forth.

The fifth exception, that the judgment does not specifically designate the party to whom the penalty is payable, is untenable. The act contemplates the payment of the fine to the justice, he being the

one authorized to impose it, and, in its sixth section, it provides for the manner of its disbursement. This exception is dismissed.

Exception sixth. "The penalty imposed is not warranted in law since the fish basket authorized by the act of the 29th of May, 1907, is intended as an exception to the act of June 3, 1878, P. L. 160, prohibiting the use of fish baskets generally, and hence a license; and, if not within the description of the latter act, and in violation of the former act, the penalty should have been twenty-five dollars."

We fail to comprehend the import of this exception. The act of 1878, section 22, makes it unlawful for any person to place any fish basket in any of the waters of this Commonwealth, and fixes a penalty for such violation in the sum of twenty-five dollars. This was followed by the act of May, 1901, P. L. 302, which makes it unlawful to fish for game fish in any of the waters of the Commonwealth in any manner except by hook and line, etc., or for food fish, such as carp, catfish, eels and suckers, with any device not specifically permitted by the act under a penalty of twenty-five dollars. This act in Comm. vs. Sechrist, 27 Super. Ct. 426, is said to be a "codification of the former fish laws," and is in turn followed by the act of the 27th of April, 1903, P. L. 319, (there being no intervening act, because, fortunately, no regular or special session of the Legislature was held at which such act could be passed), which said act permits the taking of certain fish by means of a fish basket. It is here contended that the penalties provided for in the act of 1907 relate to the retention of game fish caught in the basket, and is simply a permissive license, and the penalty imposed relates back to the act of 1903, which fixes the penalty at twenty-five dollars. As reasons assigned for such contention, it is urged that thereby penalties would not be multiplied, which is not favored by the law, (Porter vs. Dawson Bridge Co., 157 Pa. 367) that it harmonizes the first and fifth sections of the act of 1907, and comports with the seventh section of the latter act, which directs that the defendant shall be sentenced "to pay the penalty imposed by the section violated." There is much in the act which seems incongruous, and, while we might harmonize the first and fifth sections, on the open bottom of the basket, between the hours designated if the basket was unattended for less than one hour, yet we cannot reconcile "Penalty imposed by the *section* violated" in the seventh section with the penalty "for violating any *specific provision of this act*," in the fourth section.

We are not surprised at the justice being impaled somewhere in the meshes of fyke nets, fascine nets, eel weirs or kiddles, or slipping upon the rounded slats of fish baskets in our fish laws, because they have become a maze that would confound the wisdom of a Solomon. Neither is it right that the defendant should be gigged, gagged, piked or speared upon the rounded slats of a fish basket and compelled to pay fines not specifically provided by the statute, when the rounds may be shifted with another unrecognizable and uncertain side to the surface and he may again be called to pay for slipping upon the same slat. The record under the law is too vague, indefinite and uncertain upon which to base a judgment and sentence. We, therefore, sustain the second, third, fourth and sixth exceptions.

And now, 17th March, 1908: Proceedings reversed and defendant discharged.

By the Court, Jas. W. Shull, P. J

9—22—1908

THE QUESTION OF PUBLIC STREAMS.

Under a decision of the court of Wayne county it was held that an act of the Legislature declaring a stream navigable did not carry with it the right of fishing where the riparian owners had posted their lands against trespassers. By a legislative act of 1814 the Lackawaxen creek was declared a navigable stream and under the provisions of this act the State by the provisions of a later act erected a bridge over it because it was a navigable stream. The defendant in the case entered the stream from one of the abutments of the bridge and waded up the stream fishing. The owners of the land along the stream had placed notices under the trespass act forbidding trespassing and the defendant although he did not go to the shore was convicted of the charge of trespass made by three different land owners and fined. He appealed to the court of Wayne county which sustained the judgment, whereupon an appeal was taken to the Superior Court.

As the defendant was pecuniarily unable to carry on the suit an appeal was made to the anglers of the State for funds to carry up the case, because, if the ruling of the lower court was sustained the public waters in which the public could fish was limited to a very few streams, such as the Susquehanna and the Allegheny. The case was argued before the Superior Court which handed down a decision sustaining the Wayne county court. The decision is as follows:

IN THE SUPERIOR COURT OF PENNSYLVANIA NO. 194—COMMONWEALTH vs. FOSTER.

Per Curiam, May, 1908:

This case came into the court below by appeal by the defendant from a summary conviction by a justice of the peace for a violation of the provisions of the act of April 14, 1905, P. L. 169, entitled "An act making it unlawful to trespass upon land posted as private property, and providing a penalty therefor." As an appeal from the judgment of the quarter sessions in such a case does not bring up the evidence, the case is not before us for review upon any question of fact. We must presume, therefore, that all of the essentials to a conviction, as set forth in the judgment, were established by competent and sufficient evidence, and amongst, these, the facts that the defendant willfully entered upon the land of David Hopkins, the relator, without his consent, that printed notices that it was private land and warning all persons against trespassing thereon had been previously posted by the owner in the manner prescribed by the act, and that the notices remained so posted at the time of the alleged trespass. Nowhere in the record proper is it expressly stated that the land upon which the defendant entered was the bed of the Lackawaxen creek. It is conceded however, on all hands that such is the fact. But neither that fact nor any other fact upon which the court based its judgment qualifies in any degree the relator's ownership of the land. But although his ownership is undisputed, it is contended that he cannot claim the

protection of the act of 1905 (and if so he could not maintain the common-law action of trespass) as against one going upon that part of his land for the purpose of fishing, because by the prior act of 1901, the legislature declared that "public fishing shall exist," in certain waters, and amongst them "all waters or parts of waters that have been and may be declared navigable by acts of Assembly" in which class of waters, it is claimed, the part of the Lackawaxen creek where this alleged trespass was committed was placed by the act of 1814. It is not seriously claimed, at least, it cannot be successfully claimed, that this asserted right of the public to go upon the land in question for the purpose of fishing is a common-law right, nor that it was reserved by the Commonwealth in its grant of the land to the relator's predecessors in title, nor that it was conferred by the act of 1814. Therefore, to sustain appellant's contention that he, as well as every other member of the general public, has this right, these propositions must be established: First, that the Legislature intended by the act of 1901 (a) to include in the designation "all waters and parts of waters that have been and may be declared navigable by acts of Assembly," every stream large or small, navigable or unnavigable, that have been declared a "public highway for the passage of rafts, boats and vessels," (b) give to every member of the public the right to go upon the land over which any such stream flows for the purpose of fishing, and to that extent deprive the owner of his dominion over the same; second, that his right still continues notwithstanding the generality of the words of the act of 1905, and third, that it was within the power of the Legislature to give the public such right, and to thus restrict the dominion over land which appertains to private ownership, without providing for just compensation being made or secured to the owner, and that, too, although the stream be not in fact navigable by nature, and has never been in fact, or been declared by the Legislature, a public highway except for a limited purpose. Before adopting a construction of the twenty-third section of the act of 1901, which would be so far reaching in its effect upon the right of the owner of land to control its use, so long as such use does not injuriously affect others, it ought to be clear that the very words of the act require such construction. To say the least, there is room for argument that the words of the twenty-third section, particularly when read in connection with the preceding section, do not require the construction which the appellants counsel claim for them. But, be that as it may, and assuming that the Legislature intended all that is claimed, we cannot agree with the appellant's counsel that the legislation can be sustained as a legitimate exercise of the police power, upon the ground—and we must so continue their printed argument—that the public health and comfort will be subserved thereby. No case cited by the learned counsel goes to the extent, or anywhere near the point, of holding that it is within the power of the Legislature to provide for the public the means of healthful recreation upon private land, and for that purpose to deprive the owner of this right to control the use of it, without compensating him for such partial or total destruction of his dominion over it. If the Legislature may do it in the manner and for the purpose here claimed, it would be difficult to draw the line beyond which it may not go for that purpose. In the case of Vermont vs. Theriault, 43 L. R. A. 290, which goes as far as any in asserting the jurisdiction of the State over

such streams as this, it was carefully noted in the opinion of the majority of the court that by providing tha such waters should be waters over which the State has jurisdiction the Legislature did not take away the riparian owner's right to maintain trespass against everyone who should enter without his license upon his premises and catch fish from the non-boatable stream thereon. But we need not prolong the discussion. Our purpose in what we have said has been to state the question for decision and our conclusion thereon. The nature of this creek, and the uses to which it is adapted, and has been put, as well as the legislation pertaining to it and similar streams have been fully set forth in the opinion of the learned judge below. He has also discussed the legal questions as fully as is profitable, and has sustained his conclusion by reasoning and citation of authority which make it unnecessary for us to add anything further to what he has so well said.

The judgment is affirmed.

WHEN IS A DIP NET ILLEGAL?

In the section of the act of May 29, 1901, allowing the use of dip-nets the act recites that it shall be lawful to use a dip-net of a certain character and size during certain months for the taking of certain fishes. By possible inadvertence there is nothing in the section making it unlawful to fish with these nets in any other time of the year although it was supposed that the section being a permissive one a person who did not exactly comply would be liable to conviction.

In a case tried in Berks county the defendant was charged with fishing a dip-net in February, 1908. The dip-net was of the legal size and the man took suckers. The alderman fined the man for a violation of sections two and seven of the act and an appeal was allowed by the court. The court of Berks county decided that owing to the fact that the section did not make it unlawful to use a dip-net during the balance of the year the defendant was not guilty and discharged him. Following is the opinion of the court:

Commonwealth vs. Brensinger. } Appeal from Conviction for Illegal Fishing. Court of Q. S. of Berks County. No. 32 June Sess., 1908.

The defendant was found guilty and fined in a proceding before an alderman under section 38, act of May 29, 1901, P. L. 302, for violation of sections two and seven thereof, and was allowed an appeal. Instead of trying the case in the usual way, counsel for the parties agreed what on such trial the witnesses would testify, and that the court should pass upon the case as thus presented, there being no conflict in the evidence. Where an offense is by statute made a misdemeanor and triable originally, or on appeal, in the Q. S., it is there to be disposed of according to the course of the common law: Comm. vs. Clark, 3 Pa. Super. Ct. 141. There is no such language in the provisions of the act of 1901, under which this proceeding was instituted. Hence it would seem to accord with Comm. vs. Waldman, 140 Pa. 89:

Comm. vs. Forrest, 3 Distr. R. 797; Comm. vs. Johnston, 16 W. N. 349, that an appeal of this sort is properly triable by the court without indictment or the intervention of a jury—the mode of procedure that was adopted and passed uncriticized in Comm. vs. Kenny, 22 Pa. Super. Ct. 544. If so, there is no apparent difficulty about treating the submission of this case in the form in which it is submitted as in effect a demurrer to evidence and disposing of it under the rules applicable thereto; see Ament. vs. Sarver, 2 Grant 34.

The undisputed effect of the evidence as agreed upon is (1) that defendant on February 28, 1908, fished for and caught suckers only, and (2) that in so doing he used a dip-net with a span of not more than five feet and meshes not less than two inches in width and one inch from knot to knot. It does not appear by the agreement of the parties, but is a fact not negatived by the record, admitted by counsel, and known to the court, that the Maiden creek, in which he fished, is a stream not inhabited by trout. It will be noticed that the net used conforms to the requirements of section 7, but that the *month* in which the fishing was done is not one of those in which fishing with dip-nets is affirmatively allowed by that section. On the part of the Commonwealth it is contended that the case is ruled against defendant by Comm. vs. Kenney, supra; on the part of defendant that it is not, but that on the contrary the act of 1901 in attempting to make fishing for suckers in any way punishable is to be regarded as unconstitutional.

In point of fact, the only perceptible difference between the present case and Comm. vs. Kenney is in this, that here the defendant neither intended to catch nor did catch anything but suckers, whilst there the defendant's act was fishing generally, though suckers only were found in his possession. The question of the constitutionality of the act of 1901 as applicable, under its title, to any but the game and food fish enumerated in section 1 and particularly to suckers not there mentioned, is discussed with reference to the rule that everything reasonably suggested by the nature of the subject of the title as necessary or appropriate for the accomplishment of its expressed purpose is sufficiently indicated by it. The contention, that no portion of the statute dealing, as in sections 6, 7, 8, 9, 11 and 31, with fish not included in the defined classes of game and food fish may be ignored, is rejected; p. 548. The object stated by the title "to regulate the catching and encourage the propagation of game and food fish," embraces, it is said at p. 547, not only the taking of such fish, but "as well the methods deemed necessary by the Legislature to encourage their propagation, and the modification, if any of former legislation on the subject,"—a matter over which the Legislature has authority; ibid. On this point the legislative purpose can only be known from a view of the entire enactment and its accomplishment may involve provisions concerning "the methods, devices and appliances which may be lawfully used in fishing for other than game and food fish," p. 548. And thus it is concluded; ibid., that in the act of 1901 "every section (is) reasonably indicated through the subject matter of the title." Of course that conclusion is binding upon this court. It settles that every provision of the act of 1901 forbidding the taking of any kind of fish in any but a prescribed mode, or at any but a prescribed time, is to be accepted as doing so, if not as a regulation of the catching

of game and food fish, than as a means of encouraging the propagation of such,—both of these purposes being equally within the declared intent of the enactment and equally within the power of the Legislature. It follows that the violation of any such prohibition is an offense against the statute, whenever so declared, and punishable in the manner declared. Thus, section 2 of the act of 1901, making it unlawful to "fish for" game or food fish with any device not specifically permitted by the statute it was held to be an offense to fish for such fish in the manner proved in Comm. vs. Kenney, though all the defendants actually caught was a mess of suckers. Says the court at p. 548:

> "The guilt of the defendants did not depend upon what they caught, but in fishing for either game or food fish with a device not permitted by the act."

Their purpose to catch game or food fish, it is to be observed, was not negatived by anything in the record conclusive against it; the mere fact that no fish of that kind, but only suckers, were found in their possession being deemed not to negative it as against the presumption declared in section 37. But in the case now under consideration the purpose to catch game or food fish as defined in the statute is excluded. The defendant was fishing for suckers and caught nothing but suckers. The second section of the act of 1901, therefore, does not apply, and the question arises whether what the defendant did is made punishable by any other provision in the statute. The Commonwealth relies on section 7, which enacts that "it shall be lawful to fish * * * during the months of March, April, May, October. November, and December, with dipnets, for * * * suckers; provided "the nets be of a prescribed kind and that "any other fish that may be captured" therein be at once returned to the water,—and concludes with the direction that "any person" * * * violating the provisions of this section shall, on conviction thereof as provided in section 38 of this act, be subject to a fine," etc. Literally interpreted this clause can be regarded as referring only to the directions concerning the net and the restoration of other fish caught in it. (A person fishing for suckers during any of the months not enumerated cannot be said to violate the provisions making it lawful to fish during those months unless that provision is treated as forbidding fishing in any other month. The statute contains no express declaration to that effect. Neither does it say, as other sections do with reference to the subject dealt with by them, that it shall be unlawful to fish *except*, or that it shall be lawful to do so *only*, at such and such times. If in spite of all this an intent to prohibit fishing for suckers with nets during the remainder of the year is discoverable it must be by implication on the principle Expressio unius est exclusio alterius. But to declare a prohibition on that ground would be to put it into the statute by construction.) It was held in Comm. vs. Bercaw, 30 Pa. Super. Ct. 335, that the act of 1901 is a penal statute and as such subject to the rule of strict construction. It is of the essence of that rule that, in order to make one liable to a penalty, the prohibition to whose violation it is attached must be in express terms and that no offense can be created by construction: Comm. vs. Cooke, 50 Pa. 201, 207; Comm. vs. Gouger, 21 Pa. Super. Ct. 217, 230; Comm. vs. Miller (No. 1) 31 ib. 309. The construction which would create it may indeed be obvious. And yet, when it comes to penal statutes, there is a limit to the functions of construction narrower than in the case of other enactments. When that limit has been reached, what lies beyond must be treated as casus omissus: Comm. vs. Gouger, ubi Supra, although the court may be unable to conceive any reason why it should have been omitted and considers it highly improbable that an omission was intended: U. S. vs. Wiltberger, 5 Wheat. (U. S.) 76, 105. There is nothing in section 31 capable of supplying the negative omitted from section 7.

Accepting, therefore, the decision in Comm. vs. Kenney as settling the constitutionality of the act of 1901 as a whole and in all its parts, (the conclusion is that it does not control the present case because there was here no fishing for game or food fish in violation of section 2, construed together with the special provisions of section 7 as to the time and manner of catching suckers, and because section 7 does not in terms prohibit and punish fishing for suckers with dipnets of the kind here used at any other time than during the months enumerated.) It is conceded that had the defendant fished for game or food fish, he would have to be deemed obnoxious to the prohibition of section 2 against fishing with a device not specifically permitted by the statute, though he caught nothing but suckers, because section 7 in specifically permitting their taking with dip-nets enumerates certain months of which February is not one. It may also be conceded that had the defendant fished for suckers with a dip-net different from that described in the statute he might have come within the penal clause of section 7. But it seems impossible to find in the decision in Comm. vs. Kenney, applied as it must be to its facts; McFarland vs. Ins. Co., 134 Pa. 590, 601; Bank vs. Gage, 4 Pa. Super Ct. 505, 509, authority for anything beyond that, or to extend its doctrine to facts such as here presented without running counter to well settled and elementary principles controlling in the administration of penal statutes.

And now, July 6, 1908, judgment is entered for the defendant.

BY THE COURT.

NO APPEAL IN CASE OF ACQUITTAL.

Last winter a captain of a steam boat was arrested for using dynamite in a stream. He set up as a defense that the dynamite was necessary to prevent his boat from being cut down by ice and there was no intent to take fish whatever. The justice rendered a verdict of acquittal. An appeal was taken to the Court of Quarter Sessions of Armstrong county which court decided that in case of an acquittal the Commonwealth did not have the right of an appeal. The following is the opinion of the court:

Motion to quash an appeal: W. L. Peart, for defendants; W. A. McAdoo, for Commonwealth.	Court of Quarter Session, Armstrong County.

Patton, P. J., May 15, 1908:

This case originated before a justice of the peace upon the information of M. F. Albert, Fish Warden, charging the defendants with using dynamite contrary to the provisions of the act of Assembly of the 29th of May, A. D. 1901, section 26, P. L. 311. After a full hearing of the testimony on part of the Commonwealth and the defendants, they were acquitted and discharged by the justice.

Upon the petition of said Albert, the Fish Warden, an appeal was allowed. The present proceeding is an application to quash the appeal for the reason that neither the Constitution of Pennsylvania or any act of Assembly allows an appeal to the Commonwealth when the defendants have been acquitted.

Art. 5, sec. 14, of the Constitution provides that, "in all cases of *summary conviction* in this Commonwealth * * * either party may appeal." The act of 17th of April, 1876, P. L. 29, provides that, "In all cases of *summary conviction* in this Commonwealth before a magistrate or court not of record, either party may within five days after *such conviction* appeal to the Court of Quarter Sessions * * * upon allowance of the said Court of Quarter Sessions. Provided that, all appeals from *summary conviction* shall be upon such terms as to the payment of costs and entering bail as the court or judge allowing the appeal shall direct."

It is apparent at once upon reading the above quoted section of the constitution and the act of Assembly that when the defendants are acquitted and not convicted the case does not fall within the letter of the law.

Does it come within its spirit? The act of 1901 above quoted is highly penal in its provisions, the 26th section under which this information was made providing that "Any person violating any of the provisions of this act shall upon conviction be subject to a fine of one hundred dollars and imprisonment of six months in the county jail." Hence it is our duty to apply the well established principles of law that penal statutes must be strictly construed and never extended by implication, that in case of doubtful meaning they shall be construed in favor of the accused; that when there is such an ambiguity in a statute as to leave a reasonable doubt as to its meaning it is the duty of the court not to inflict the punishment.

It is argued by the appellant that the Constitutional Convention and the Legislature intended to use the words "summary proceeding" instead of "summary conviction" and that the appeal might be taken five days after "*trial*" instead of "*conviction*." The reason is that the able and intelligent men who make our laws know full well how to use apt words to express their intentions.

So far as we have been able to discover there is no case in Pennsylvania when the question as to the right of the Commonwealth to appeal in case of the acquittal of the defendants in a summary proceeding has been distinctly raised.

However the question involved has been considered by the higher courts of other states and decided against the right of appeal by the Commonwealth. In People vs. Miner, 19, L. R. A. 342, the Supreme Court of Illinois, construing an act of Assembly, somewhat similar to the one now before us, and when the act of Assembly *allowed* an appeal on part of the State held, "A statute giving a right of appeal from an acquittal in a criminal case for illegal fishing to the party making the complaint, or to any person giving the necessary bond

is in violation of the constitutional provision that no person shall be twice put in jeopardy for the same offense." In the case above cited the defendant was tried before the justice and acquitted the informer appealed. It was ruled that such an appeal was forbidden both by the common law and the constitution.

In People vs. John, York Co., 80 Ill. App. 163, it was held that the State had no right to appeal from the acquittal of the defendant upon a charge of violating the Pharmacy Act. In Portland vs. Erickson, 39 Or. 10, 62 pac. 753, held that the city cannot appeal from the acquittal of the defendant of a change for violating an ordinance punishable by fine or imprisonment.

These authorities but follow the trend of the decisions of our own courts that when the defendant is discharged by a justice or acquitted by a jury that particular case is at an end, although in some instances the charge may be renewed in a different form or before the same or on different.

The case of Comm. vs. Kenney, 32 Super. Ct. Rept. 544, and Comm. vs. Immel, 33 Pa. Super. Ct Repts. 388, have been called to our attention where an appeal was allowed to the Commonwealth.

Suffice it to say that the question now before us was not called to the attention of either the lower or the appellate courts.

Other objections have been made before us to the constitutionality of the act of 1901, and the impossibility of complying with that portion of section 26, that requires permission to be obtained from the proper National, State, city or county officials to use dynamite. Some of these objections we believe are well taken but we will not discuss them now.

We rest our decision upon the broad principle that the defendants having been discharged by the justice of the peace, after a full hearing, the Commonwealth or the informer has no right of appeal.

And now May 15, 1908, the appeal is dismissed.

BY THE COURT.

To which order the Commonwealth excepts at its request bill of exceptions sealed.

W. D. PATTON, P. J. (Seal.)

APPEALS IN SUMMARY CONVICTIONS.

In 1907, Edgar A. Weimer and three others were arrested in the city of Lebanon and convicted in summary proceedings before Alderman Landis A. Gerberich for violating sections 2 and 15 of the act of May 29, 1901, regulating the catching of fish. From the verdict of the magistrate the defendants asked an appeal to the Court of Quarter Sessions of Lebanon county. After hearing the arguments the court declined to grant the appeal. The defendants then took out an appeal to the Superior Court of Pennsylvania asking that the

lower court should allow the appeal asked for. The Superior Court dismissed this appeal in the following opinion:

IN THE SUPERIOR COURT OF PENNSYLVANIA.

Edgar A. Weimer. vs. Commonwealth	No. 236 October Term, 1907. Appeal from Quarter Session of Lebanon County.

Filed July 15, 1907.
Rice, P. J.:

We are asked in this case to reverse the action of the court below in refusing the defendant's petition for the allowance of an appeal from a summary conviction before a magistrate, without having before us the transcript of the magistrate's record. All that we have are the defendant's petition, and the order of the court refusing the appeal. The constitutional provision upon the subject, which was carried into effect by the act of 1876 is as follows: "In all cases of summary conviction in this Commonwealth, or if judgment in suit for a penalty before a magistrate, or court not of record, either party may appeal to such court of record as may be prescribed by law, upon allowance of the appellate court or judge thereof upon cause shown." As was said in Thompson vs. Preston, 5 Pa. Superior Ct., 154, and again in Comm. vs. Hendley, 7 Pa. Super. Ct. 356, neither that provision of the constitution nor the act of 1876 contemplates that an appeal shall be allowed merely because the party desiring it is dissatisfied with the result of the trial before the magistrate; the whole matter rests in the sound discretion of the court below. And again as was said in the latter case "without going outside of the record proper, we cannot know just what was considered by the court below. It had the right to look at the evidence offered before the magistrate, in behalf of both the Commonwealth and defendant, and other matters which may not be examined into here, as the appeal to this court may be regarded as a substitute for a certiorari." Undoubtedly for an abuse of discretion the party aggrieved by the refusal of the appeal would have a remedy in this court, but the abuse of discretion must appear somewhere in the proceedings sent up to us for review. Apparently the decision of the case before the magistrate depended upon the determination of questions of fact arising upon the evidence submitted to him and in determining whether an appeal should be allowed from his decision the court was not confined to a mere examination of his petition nor compelled to take its allegations for verity. Many things might occur upon the hearings of such an application which it would be proper for the court to consider, but which we cannot consider because there is no way to bring them upon the record. It is suggested in the appellant's argument that the case raises a difficult question of law, and we may say that if this appeared in the transcript of the magistrate and the transcript were before us this might be ground for holding that the court ought to have granted the appeal.

But, as we have suggested, the transcript is not sent up and it is impossible to see how we can convict the court below of an abuse of discretion, unless it is held that upon an appeal from the action of the court the facts averred in the petition must be accepted for verity.

We are not prepared to go to that extent. We see no substantial ground upon which we can base a decision substituting our discretion for that of the court in which it is reposed by the statute.

The appeal is dismissed

From this decision of the Superior Court the defendants appealed to the Supreme Court which refused the appeal as is showed by the following record:

IN THE SUPREME COURT OF PENNSYLVANIA.

In Commonwealth vs. Brandt and same vs. Weimer, 4 cases in petition for an allowance of an appeal, this court has made the following order: September 21, 1908, appeal refused in each case.

Per Curiam.

THE QUESTION OF SEINES.

Some time ago some men were arrested in Columbia county for using seines under the provisions of the act of April 26, 1905, the Commonwealth claiming that the manner in which the seine should be used is illegal and that the seine could only be used as a sweep. They were found guilty by the justice of the peace and fined $25 from which decision they appealed. The Court of Quarter Sessions reversed the judgment on the ground that the manner of fishing is not illegal. The following is the opinion of the court:

Commonwealth of Pennsylvania vs. James G. Harrison.	In the Court of Quarter Sessions of Columbia County. No. 15 May Sessions, 1908. Appeal from Summary Conviction. Case Stated.

Opinion of the Court.

This as an action for the recovery of a penalty of $25 and costs for an alleged violation of the provisions of the second section of the act of May 29, 1901, P. L. 302, known as the Fish Law.

The material facts of this case are presented to us in the form of a case stated, and agreed to by both parties. The case must be decided upon the facts thus presented

It is admitted: (1) That the defendant was arrested upon a warrant issued upon a complaint charging him with a violation of the provisions of the second section of the act of May 29, 1901, known as the "Fish Law," and that after hearing had before a justice of the peace a judgment of guilty was entered against him and he was thereupon sentenced to pay a fine and costs; that by order of the court this appeal was allowed; that Fishing Creek is a public stream and highway in Columbia county; that the defendant's act complained of was committed within said county; that the defendant's act complained of was committed within said county; that the de-

fendant, with other persons, was engaged in fishing in said stream February 4, 1908, and was not fishing with rod, hook and line, or with handline having not more than three hooks; that the defendant was fishing with a seine-net in said creek for carp, suckers and mullets; that the meshes of the seine-net were not less than four inches in width or two inches from knot to knot; that the defendant had first given bond with surety in the sum of $200 conditioned that all fish other than carp, suckers or mullets should be immediately returned to the waters from which taken; that the said bond was approved and forwarded to the Department of Fisheries; and that the defendant did not fish for or take from said stream any fish other than carp, suckers and mullets.

(2) That in fishing as aforesaid the defendant with the assistance of other persons used a seine-net in the following manner:

> (a) They (meaning the said defendant and the other persons engaged with him in fishing as aforesaid) first cut a channel or opening through the ice formed over the the said stream at right angles with the current thereof, about twenty or twenty-five feet in length, and twelve to fifteen inches in width, said channel extending to within a few feet of either shore line.
>
> (b) The said defendant then went some distance below the point where the said channel was cut into the ice and by walking, pounding, etc., on the ice, drove the fish up stream and beyond the point where the channel was cut across the ice.
>
> (c) Defendant then lowered the said seine net into said channel and held the bottom or lead line thereof secure by means of loose poles placed at intervals along the channel aforesaid, and held the top of the net taut by securing the ends thereof.
>
> (d) That thereupon, while the said seine net was in the above described position, the said defendant or other parties aiding in said fishing went some distance below (above) the said net and channel cut into the ice, and by walking, pounding on the ice, etc., drove the fish down stream, toward, and into the said net; by means of which they were caught in said net; whereupon the net was lifted out of the channel by raising the lead-line out upon the surface of the ice, and suckers and mullets were then and there, and in said manner, by said defendant, caught, taken and retained from the said stream of Fishing Creek, all in the county of Columbia, aforesaid.

That if the court be of the opinion that the above action, conduct and fishing by the said defendant was in violation of the provisions of the act of Assembly of May 29, 1901, and was not rendered lawful by the provisions of the act of April 26, 1905, entitled "An act permitting the taking of carp, suckers and mullets, by means of seine nets, etc., then judgment to be rendered in favor of the Commonwealth affirming the conviction of the said defendant by the said justice; but if the court be of the opinion that said conduct, fishing and action by the defendant was lawful under the provisions of the act of April 26, 1905, aforesaid, then the conviction of the defendant by the said justice to be reversed and set aside, and judgment to be rendered in favor of the defendant.

Section two of the said act of May 29, 1901, provides "That from and after the passage of this act, it shall be unlawful to fish for game fish, in any of the waters of this Commonwealth, in any manner except with rod, hook and line, or with handline having not more than three hooks; or, for food fish, with any device not specifically permitted in this act. Any person violating any of the provisions of this section shall, on conviction thereof as provided in section thirty-eight of this act, be subject to a fine of twenty-five dollars."

Section nine of the said Act provides that "it shall be lawful to catch with seine nets, at any time of the year, carp, catfish, eels and suckers, in any waters of this Commonwealth not inhabited by trout, provided, the owner or owners, or operator or operators, of such nets shall give satisfactory bond to the Fish Commissioners, in the sum of two hundred dollars, to restore alive and unharmed any other fish that may be taken; and conditioned that the mesh of such nets shall not be less than one and one-half inch in width, or three-quarters of an inch from knot to knot."

Section one of the Act of April 26, 1905, P. L. 310, provides "That it shall be lawful to fish in any waters of this Commonwealth from September first until June twentieth inclusive in each year, with seine nets, for carp, suckers and mullets: Provided, That the meshes of said seine nets shall not be less than four inches in width, or two inches from knot to knot: And provided further, that before any person or persons shall be authorized to catch any carp, suckers or mullets, by means of said seine nets, he or they shall first give bond to the amount of two hundred dollars, that all fish other than carp, suckers, or mullets, shall be immediately returned unharmed to the waters from which taken; the security to be approved by the courts of the county in which the person or persons reside; the same to be forwarded to the Department of Fisheries."

Section three of the said Act of 1905 provides that "All acts or parts of acts inconsistent therewith be and the same are hereby repealed."

The pinch of this case is, whether or not the defendant being licensed under the provisions of the Act of April 26, 1905, P. L. 310, to use a "seine net" was permitted to make use of the same in a manner as above stated.

From the facts agreed to in this case we think it may fairly be conceded that the defendant honestly believed that he had a lawful right to fish for and to catch carp, suckers and mullets with a seine net in the way he did.

The Act under consideration is a penal statute and the rule of strict construction applies. Penal statutes must be given their plain and literal meaning.

The ninth section of the Act of May 29, 1901, makes it lawful to catch with seine nets, carp and suckers, at any time of the year in any of the waters of this Commonwealth, not inhabited by trout. But there is no provision in the Act for taking of carp and suckers with any sort of net in such a stream as Fishing Creek, which is inhabited by trout. The Legislature perhaps realizing the elimination of carp,

suckers and mullets from trout streams was an advantage to the propagation of trout withdrew the former restriction as to the use of seine nets in trout streams, and by the Act of April 26, 1905, permitted the taking of carp, suckers and mullets by means of seine nets in any of the waters of the Commonwealth from September first to June twentieth in each year upon certain conditions, viz:

(a) That the meshes of said seine nets used shall not be less than four inches in width of two inches from knot to knot.

(b) That before any person shall be authorized to catch any carp, suckers and mullets by means of said seine nets, he shall first give bond in two hundred dollars to return all other kinds of fish unharmed to the waters from which taken, the bond to be approved by the courts of the county, etc. The Act of 1905, further provides for the forfeiture of the bond and the infliction of a fine for any violation of its provisions and for the summary conviction before a justice of the peace or magistrate of any offender.

If we compare the Act of 1905 with the earlier Act of 1901 it is apparent that the Legislature did not have in mind in passing the Act of 1905, so much the protection of carp, suckers and mullets, as they did the protection of game fish that inhabit the same streams. They materially enlarge the right to catch the former kinds of fish by permitting the use of the seine net in any of the waters of the Commonwealth, where before such use had only been permitted in streams not inhabited by trout.

The facts show that the defendant was fishing in the waters of the Fishing Creek, with a seine net, and by means of a seine net was catching and taking carp, suckers and mullets, and that he had given the required bond.

The Commonwealth contends that the manner in which the defendant was using the seine net was not the ordinary and usual manner in which such a net is used, and therefore, the Act of 1905, furnishes the defendant no defense. This contention is put upon the ground that when the Act of 1905 uses the word "seine net" it means a seine net which shall be drug along the stream and pulled into shore according to the ordinary usages of such a net.

On the other hand the defendant contends, that while such a restriction may be a very wise and proper one to make and may even have possibly been in mind of the Legislature nevertheless such a restriction of the manner of using this net is not in the Act, and that this is being a penal statute, the defendant can only be convicted for doing something which is plainly prohibited by the terms of the Act itself.

The use of the seine net is referred to four different times in the act. Once in the title and three times in the body of the act. In none of these references is there the least attempt to define, restrict or limit *the manner of using the net*. The title of the act is as follows: "An act permitting the taking of carp, *suckers and mullets, by means of* seine nets, etc.

Section one provides that it shall be lawful to fish, etc., *"with seine nets."* In the ninth line of the same section, the following language is used, "to catch any carp, suckers or mullets, by means *of said seine nets."* Therefore, the only language contained in this act which could

in any sense be considered descriptive of the manner of using the net, are the words, "with," and "by means of" seine nets.

These are not technical words and, under the well settled rule of construction they are to be given their plain and ordinary meaning. This act says that it shall be lawful to fish with seine nets from September first until June twentieth for carp, suckers and mullets.

The Century Dictionary defines the word "net" as "An open textile fabric, of cotton, linen, hemp, silk, or other materials, tight or woven with a mesh of any size, designed or used for catching animals alive, either by enclosing them up or entangling them." And the word "seine" as "a kind of net used for taking fish, one of the class of encircling nets, consisting of floats at the upper edge, and with leads of greater or less weight at the lower, and used to enclose a certain area of water, and by bringing the nets together, either in a boat or on the shore to secure the fish that may be enclosed."

Webster's Dictionary defines the word "net" as "an instrument for catching fish and birds formed with twine or thread wrought or woven in meshes"; "Any thing designed or fitted to entrap or deceive:" and the word "seine" as "a large net for catching fish."

The act permits fishing with a seine for carp, suckers and mullets at any time from September first to June twentieth in each year. This includes all of the winter months, the months during which all of the streams, or at least a majority of them in the Commonwealth where any citizen would be likely to fish with a seine net for such fish are covered with ice. If it were only lawful to fish with seine nets as the Commonwealth contends in this case, then, before the citizen could do so, when the streams are covered with ice, it would first be necessary to remove the ice from the stream, in which it is proposed to fish and after that had been accomplished it is not likely there would be any fish there to be caught. We can scarcely believe that the Legislature intended to impose such an unreasonable burden upon any citizen who is licensed to catch carp, suckers and mullets by means of a seine net when the streams are covered with snow and ice.

It should not be declared that the Legislature intended the Act of 1905, to restrict or limit the manner of using the seine net unless that intent is clearly apparent in the words used. The Court should not go outside of the language of an act to find some supposed intention existing in the mind of the Legislature. Endlich on Int. of Statutes, Sec. 8, page 11, says:—

"It is inaccurate to speak of the meaning or intent of a statute as something separate or distinct from the meaning of its language. The intention of the Legislature is to be ascertained by means of the words which it has used, and though these words are often modified, though their literal sense is not always adopted, though they are sometimes strained, transported as inadequate or superfluous, they are still the only interpreters of the mind of the Legislature. Index animo sermo. The Court knows nothing of the intention of an act, except from the words in which it is expressed, applied to the facts existing at the time; the meaning of the law being the law itself. It is upon this ground that the rule must have its rational foundation, which, where the words can bear but one meaning, declares that there is no room for interpretation. If the construction of a statute were not esen-

tially the construction of its language, there could be no reason for binding a Court to the clear meaning of an act working an injustice or inconvenience unforseen by the Legislature. Yet it is clear, that, to give it a construction contrary to, or different from that which the words import or can possibly import, is not to interpret law, but to make it; and the Judges are to remember that their office is jus dicere, not jus dare. Every departure from the clear language of a statute is, in effect, an assumption of legislative powers by the Court. It has, indeed, been intimated that this is the case whenever the Court permits the consideration of consequences to dictate the construction of a doubtful act."

Mr. Justice Green, in speaking for the Supreme Court in Pittsburg vs. Kalchthaler, 114 Pa., at page 552, says:—

"We think it is always unsafe to depart from the plain and literal meaning of the words contained in legislative enactments out of deference to some supposed intent, or absence of intent, which would prevent the application of the words actually used to a given subject. Such a practice is really substituting the theory of a Court, which may, and often do, vary with the personality of the individuals who compose it, in the place of the express words of the law as enacted by the law making power. It is a practice to be avoided and not followed. It has been condemned by many text writers and by many Courts. Occasionally it has been departed from, but the path is a devious and dangerous one, which ought never to be trodden, except upon consideration of the most convincing character and the gravest moment."

In Com. vs. Fitler, 147 Pa., page 291, Allison J., in refusing to apply the interpretation to an Act of Assembly desired by the defendant, says:—

"If this is the true interpretation of the act, it is quite evident that the expression of such intention has been wholly omitted by the Legislature, and therefore is not to be adopted, unless the intention to attach such meaning to the words under consideration can not be avoided."

This language might be applied to the case at bar. If the true interpretation of the Act of 1905 is that a seine net can only be used in one way, "it is quite evident that the expression of such intention has been wholly omitted by the Legislature, and, therefore, it is not to be adopted, unless the intention to attach such meaning to the words under consideration cannot be avoided."

In the Act of 1905 the Legislature in plain terms states upon what conditions and restrictions the seine net may be used to catch carp, suckers and mulelts. They have said this may be used, provided, the meshes are of a certain dimension, and that only certain kinds of fish are caught and that a bond is given and approved by the Court, and all other kinds of fish are returned to the streams unharmed. In other words, they have set forth the conditions, limitations and restrictions which they intended to accompany the use of the seine net. Not a word is said about the manner of its use.

We will not undertake to legislate by enlarging the terms of the act by reading into it what the Commonwealth calls the spirit and intention of the law. The act is penal. This suit was brought for the purpose of recovering a penalty.

"The intention of a penal statute must be found in the language actually used, interpreted according to its fair and obvious meaning. It is not permitted to Courts in this class of cases to attribute inadventure or oversight to the Legislature when enumerating classes or persons who are subject to the penal enactment, or to depart from the settled meaning of the words or phrases in order to bring persons not named or distinctly described within the supposed purpose of the statute." U. S. vs. Harris, 177 U. S. 305. (20 Sup. Ct. Rep. 609); U. S. vs. Wiltberger, 18 U. S. 76.

Henderson J. in speaking for the Superior Court in Comm. vs. Shaleen, 30 Sup. Ct. on page 11, says:

"Although no good reason may appear to the Court why a limitation of the term used in the statute should have been omitted, and although it may seem highly improbable that an omission was intended, the Court is not at liberty to enlarge the enactment to cover cases not within the clear and obvious meaning of the language."

Unless the plain and ordinary meaning of the language of the statute brings a case within its letter, the rule of strict construction forbids the Court to create a crime where none exists. Endlich on the Int. of Statutes, sec. 329, pg. 455, says:

"In other words, whilst a case may come within the purview of a remedial statute, unless its language, properly construed, excludes it, it is excluded from the reach of a criminal statute unless the language includes it; unless the proper meaning of the language of the statute brings a case with its letter, the rule of strict construction, forbids the court to create a crime or penalty by construction, and requires it to avoid the same by construction, and, although the Court may be unable to conceive any reason why the case in question should have been omitted, and considers it highly improbable that an omission was intended it is not at liberty to extend the enactment to cases not included within the clear and obvious import of the language."

Being of the opinion that the restriction contended for by the Commonwealth in the use of the seine net is not in the Act, the conviction should be reversed and set aside.

And now, August 3rd, 1908, the Court being of the opinion that the conduct, fishing and action by the defendant was lawful under the provisions of the Act of April 26th, 1905, the conviction of the defendant by the Justice of the Peace is reversed and set aside and judgment entered in favor of the defendant.

By the Court,

CHAS. C. EVANS, *P. J.*

A SUMMARY CONVICTION NOT SUSTAINED ON AN APPEAL.

In Luzerne County Ira Boyd was convicted of violation of the fish laws in a trial before a magistrate. The case was one of summary conviction and the defendant took out an appeal by leave of the Court as prescribed by the Constitution and the Act of 1876. The case was duly heard before the Court, when after reviewing the case the Court declared the defendant not guilty in the following opinion. The case is cited here to show how carefully the rights of a defendant are safeguarded by the law in cases of summary conviction.

Luzerne County, ss.

Commonwealth	In Common Pleas,
vs.	No. 324, June Sessions, 1907.
Ira Boyd.	No. 99, Sept. Sessions, 1907.

Appeal from summary conviction for violation of the fish laws.

OPINION AND JUDGMENT.

The defendant was summarily convicted and fined $145 on a single sentence for (1) "fishing with, as owner or operator, five fyke-nets, without having thereon a metallic tag containing the name and address of the owner," and (2) "having in his possession two dead perch caught with an illegal device and in an illegal manner."

Upon trial of the appeal allowed from this conviction, the facts were established by agreement in writing between the District Attorney and Counsel for Defendant.

The only incriminating facts upon which a conviction could possibly be sustained are the following:

(1) "That two dead perch were found by the informer, who is the prosecutor, in a fish box belonging to the defendant in the waters of a pond owned by him near his boat house."

(2) "That five fyke-nets, without metallic tags containing the name and address of the owner, were found lying upon the bank of the pond and about fifteen feet from the water. No nets were found in the water or in place for fishing."

We are asked to infer from these bare facts

(1) That the defendant actually fished with the said fyke-nets, and

(2) That the said perch were caught with an illegal device, namely, with the said fyke-nets.

The presumption of innocence which operates in favor of the accused, even on a charge of violating the fish laws, will not permit such inferences unless the Commonwealth's case is made out as it contends by the statutory provision "that in all cases of arrest made for the violation of this act, the possession of the fishes or the possession of the nets, or possession of or operation of other devices prohibited or not permited by law, shall be *prima facie* evidence of the violation of this act."

But this provision is only available when a violation has been established, to fix it upon the accused.

For example, possession of a fish under legal size or out of legal season would fix upon the accused a violation established by the very fact of under size or out of season.

But the mere posession of dead fish would not prove that they were caught with an illegal device, and therefore would not establish, even *prima facie*, a violation as charged in this proceeding, nor would even the contemporaneous possession of fish and nets compel the conclusion, against the presumption of innocence, that the fish were caught with the nets, even if there was contemporaneous possession, which is not shown.

We are asked to presume that the fish, which might have been caught with a legal device, were actually caught with an illegal device, because an illegal device was found in possession of the accused. We are unable so to presume. There are other points which we will not discuss.

Being of the opinion that the Commonwealth has failed to establish defendant's guilt, we do now adjudge him to be not guilty and set aside the summary conviction.

FROG WORK.

No information of any value was added during the year to what the Department already possessed with respect to frog culture. One reason possibly is that other and very important urgent work made it necessary to suspend close investigation at all the hatcheries excepting one. The greater part of the output of frogs and tadpoles in 1908 was through the medium of field work in Wayne and Philadelphia counties. The building of a road forced the abandonment of the temporary pond at Wayne and the construction of new ponds at Torresdale caused the temporary abandonment of the frog pond at that station.

At the Crawford Hatchery, Conneaut Lake, only were the frog ponds maintained and investigations continued. Even their frog work was hampered on account of the great drought, which at one time completely dried the ponds and badly effected the yearlings and two year-olds which were being reared there. On one occasion it was necessary to carry water in tubs from the main stream which flows through the grounds in order that there should be water.

It was while doing this that the only new interesting feature in frog work was noted. In effect it was that where a pond becomes dry by evaporation, frogs and even tadpoles having only the hind legs developed will seek moist places and be able to maintain an existence for an undetermined period. To ascertain how long frogs and partially developed tadpoles will exist in this manner will be one of the duties of the Superintendents of the hatcheries the coming year.

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END OF YEAR